



### 9<sup>th</sup> Annual Geriatric Symposium May 17, 2018

# Welcome!





We are with you for life.

# "Let's have a Heart to Heart about Heart Failure"

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#### Outline

- Definitions and scope of problem
- Diagnosing and classifying heart failure
- Approach to management of CHF
  - Oral drug therapy (ACE-I, ARB, betablockers, aldosterone blockade, digoxin)
  - Device therapy
    - Biventricular (BiV) pacers
    - Intracardiac defibrillators (ICD's)
  - Surgical Therapies
- The 5-M method to successful living

## Congestive Heart Failure Definition

Heart or Cardiac Failure results from any structural or functional abnormality that impairs the ability of the ventricle to eject blood (Systolic Heart Failure) or to fill with blood (Diastolic Heart Failure).

### Anatomy 101

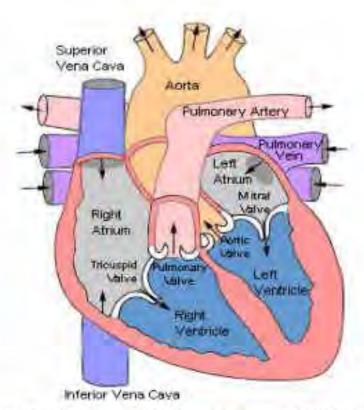
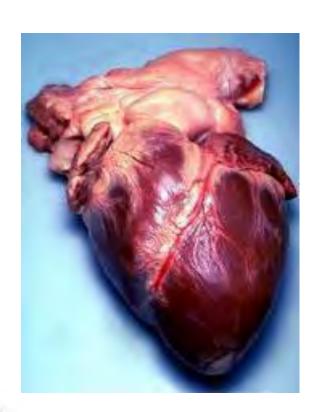
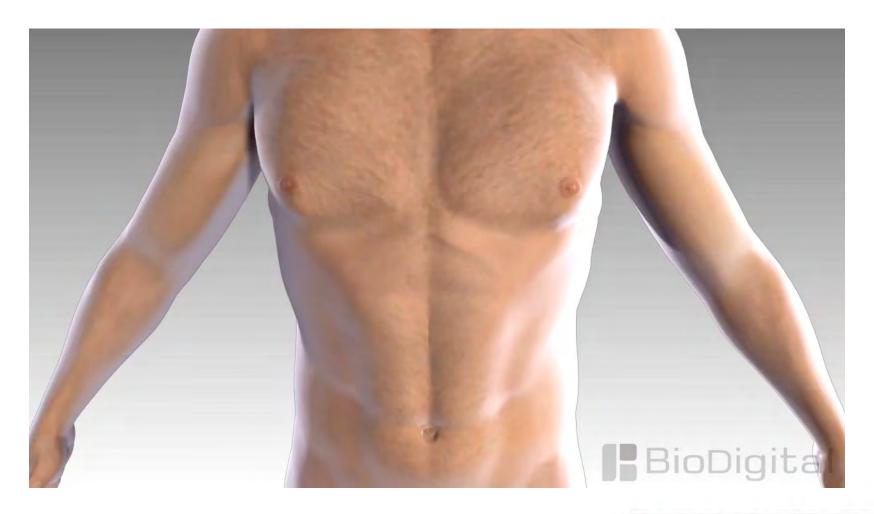


Figure 1: Diagram of the human heart showing the left and right ventricles along with the each of the four valves [HeartCenterOnline, 2002]



## Change of Beat



### Types of Heart Failure

- Low-Output Heart Failure
  - Systolic (squeezing) Heart Failure:
    - Decreased pumping function of the heart, which results in fluid back up in the lungs and heart failure
    - Decreased cardiac output
    - Decreased Left ventricular ejection fraction
  - Diastolic (relaxation) Heart Failure:
    - Elevated Left and Right ventricular end-diastolic pressures
    - May have normal LVEF
    - Thick, stiff heart muscle prevent heart to fill with blood properly
- High-Output Heart Failure
  - Seen with peripheral shunting, low-systemic vascular resistance, hyperthryoidism, carcinoid, anemia
  - Often have normal cardiac output
- Right-Ventricular Failure
  - Seen with pulmonary hypertension, large RV infarctions



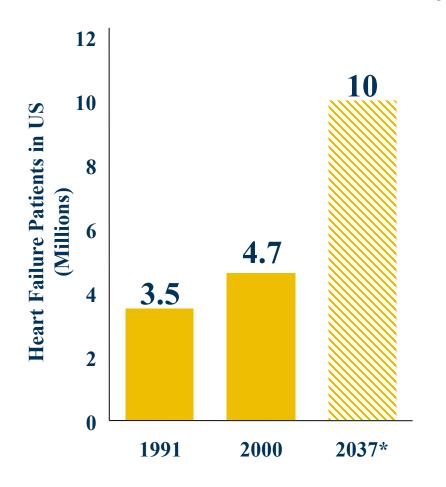
#### Risk Factors for Heart Failure

- Coronary artery disease
- Hypertension (LVH)
- Valvular heart disease
- Alcoholism
- Infection (viral)

- Diabetes
- Congenital heart defects
- Other:
  - Obesity
  - Age
  - Smoking
  - Obstructive Sleep Apnea
  - Anemia



# Epidemiology of Heart Failure in the US



- More deaths from heart failure than from all forms of cancer combined
- 550,000 new cases/year
- 4.7 million symptomatic patients; estimated 10 million in 2037

## Congestive Heart Failure Symptoms

- Due to excess fluid accumulation:
  - Dyspnea or shortness of breath
  - Edema
  - Hepatic congestion
  - Ascites
  - Orthopnea, Paroxysmal Nocturnal Dyspnea (PND)
- Due to reduction in cardiac output:
  - Fatigue (especially with exertion)
  - Weakness

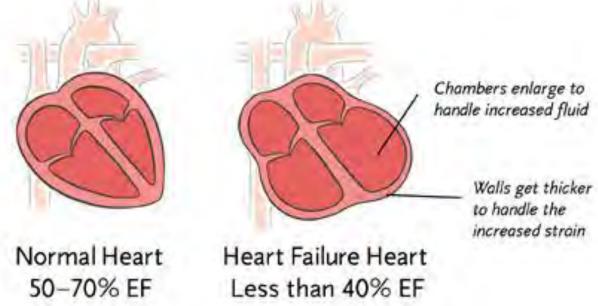


# Classifying Heart Failure: Terminology and Staging

# A Key Indicator for Diagnosing Heart Failure

#### Ejection Fraction (EF)

 Ejection Fraction (EF) is the percentage of blood that is pumped out of your heart during each beat



#### Classification of Heart Failure

#### **ACC/AHA HF Stage**<sup>1</sup>

#### NYHA Functional Class<sup>2</sup>

- A At high risk for heart failure but without structural heart disease or symptoms of heart failure (eg, patients with hypertension or coronary artery disease)
- **B** Structural heart disease but without symptoms of heart failure
- C Structural heart disease with prior or current symptoms of heart failure
- D Refractory heart failure requiring specialized interventions

I Asymptomatic

II Symptomatic with moderate exertion

III Symptomatic with minimal exertion

IV Symptomatic at rest

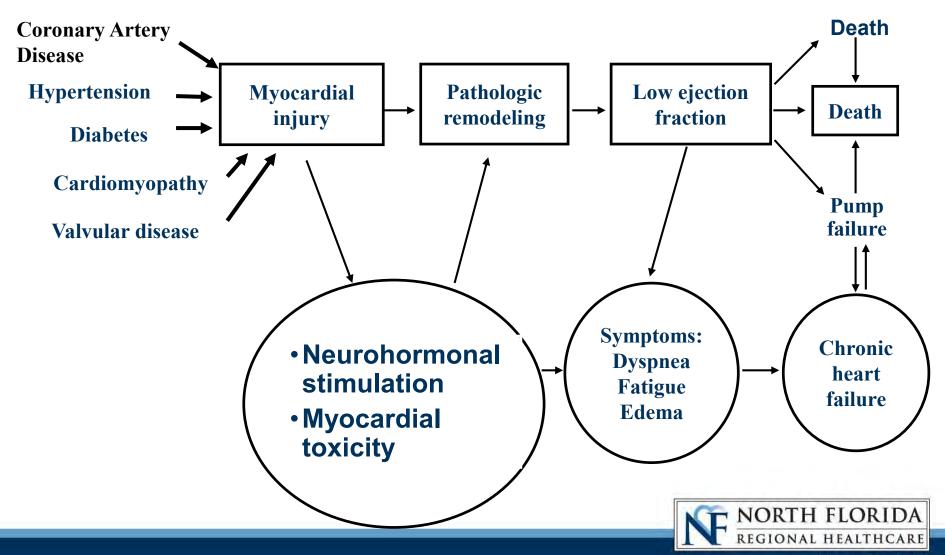
### How Heart Failure Is Diagnosed

- Medical history is taken to reveal symptoms
- Physical exam is done
- Tests
  - Chest X-ray
  - Blood tests
  - Electrical tracing of heart (Electrocardiogram or "ECG")
  - Ultrasound of heart (Echocardiogram or "Echo")
  - X-ray of the inside of blood vessels (Angiogram)

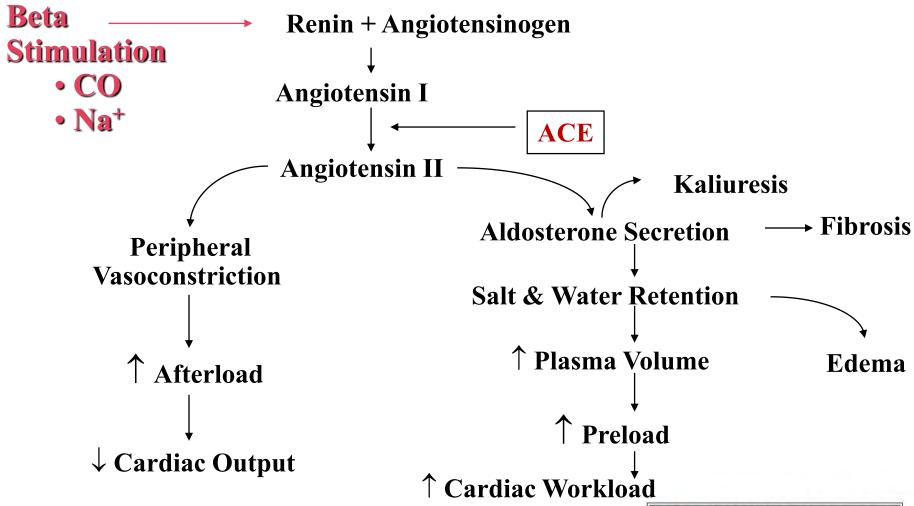


## Pathophysiology

### Pathologic Progression of CV Disease



### Compensatory Mechanisms: Renin-Angiotensin-Aldosterone System



## Drug Therapy

## Goals of Therapy

- Reduce symptoms of heart failure
- Improve health-related quality of life and functional status
- Decrease the rate of hospitalizations
- Prolong survival

#### Heart Failure Medications

Type	What does it do?
ACE Inhibitor - "Pril"	Dilates blood vessels which reduce blood pressure
ARB (Angiotension receptor blockers) - "sartan"	Dilates blood vessels which reduce blood pressure
Beta-Blockers- "lol"	Reduces the action of stress hormones and slows heart rate
Digoxin	Slows the heart rate and improves pumping function of heart
Diuretic	Filters sodium and excess fluid to reduce workload on heart
Aldosterone Blockade	Blocks neurohormal activation and controls volume

#### ACEi and ARB

#### Mechanism of action:

- ACEi: inhibits conversion of Ang I to Ang II
- ARBs: blocks binding of Ang II to Ang II receptor

Benefits: decrease heart failure symptoms, reduce hospitalizations, slow disease progression, prolong survival

Adverse reactions: cough (switch to ARB), hyperkalemia, symptomatic hypotension, worsening renal function, angioedema

Drug	Target Dose	
Captopril	50 mg TID	
Enalapril	10-20 mg BID	
Lisinopril	20-40 mg daily	
Candesartan	an 32 mg daily	
Losartan	50-150 mg daily	
Valsartan	160 mg BID	



#### Beta Blockers

Mechanism of action: inhibit the activation of cardiac adrenergic receptors reducing sympathetic excess activation and reversing cardiac remodeling

Benefits: improve exercise tolerance, offer symptomatic improvements, decrease hospitalizations, reduce risk of mortality

Adverse reactions: symptomatic hypotension, bradycardia,

fatigue

Drug	Target Dose < 85 kg	Target Dose > 85 kg
Bisoprolol	10 mg daily	10 mg daily
Carvedilol	25 mg BID	50 mg BID
Metoprolol XL	200 mg daily	200 mg daily



#### Diuretics

Mechanism of action:

 Loop diuretics inhibit sodium and water resorption at the ascending limb of the loop of Henle

Benefits: decrease preload to provide symptomatic benefits

Adverse reactions: hypokalemia, hypomagnesemia, excessive fluid loss and dehydration

Drug	Maximum Total Daily Dose (Oral)	
Bumetanide	10 mg	
Furosemide	600 mg	
Torsemide	200 mg	

#### Medications to Avoid

Negative inotropic agents (decrease contractility)

- Antiarrhythmics (e.g. disopyramide, flecainide, propafenone, dronedarone)
- Nondihydropyridine calcium channel blockers (e.g. verapamil and diltiazem)

Agents that cause sodium and water retention (increase preload)

NSAIDs
 Sodium-containing drugs (e.g. oxacillin)

Thiazolidinediones
 Glucocorticoids

Salicylates
 Androgens and estrogens

Cardiotoxic agents (e.g. doxorubicin, trastuzumab)



#### Acute Heart Failure Management

#### DRY-WARM

Adequately Perfused Hemodynamically Compensated

Adjust oral therapy

#### WFT-WARM

Congested & Well-Perfused

Vasodilators, diuretics

#### DRY-COLD

Hypoperfused & Hypovolemic

Fluid administration

#### WET-COLD

Congested & Hypoperfused

Normal BP: vasodilators

Reduced BP: inotropes or vasopressors

PCWP 18 (mmHg)

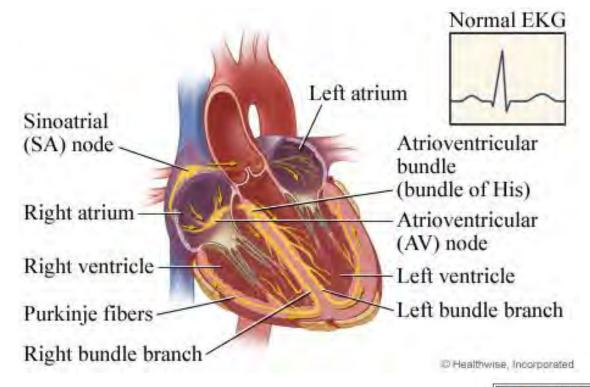


CI 2.2 (L/min/m<sup>2</sup>)

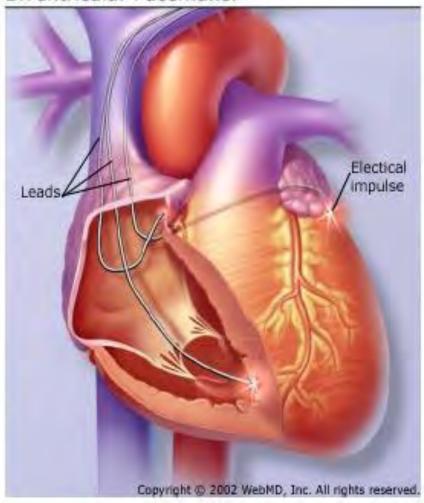
## Device Therapy: Biventricular Pacing

# Biventricular Pacing Ventricular Dysynchrony

 Abnormal ventricular conduction resulting in a mechanical delay and dysynchronous contraction



#### Biventricular Pacemaker



# Cardiac Resynchronization Therapy Key Points

- Indications
  - Moderate to severe CHF who have failed optimal medical therapy
  - EF < 30%
  - Evidence of electrical conduction delay
- Timing of Referral Important
  - Patients often not on optimal Medical Rx
  - Patients referred too late- Not a Bail Out

# Defibrillators (ICD's)

# Heart Failure and Sudden Cardiac Death

- Your heart <u>suddenly</u> goes into a very fast and chaotic rhythm and stops pumping blood
- Caused by an "electrical" problem in your heart
- SCD is one of the leading causes of death in the U.S.
  - approximately 450,000 deaths a year
- Patients with heart failure are 6-9 times as likely to develop sudden cardiac death as the general population

#### Who should Consider an ICD?

- New York Heart Association (NYHA) Class I, who are at least 40 days post-MI, have an LVEF ≤ 30%
- NYHA Class II and III heart failure, and measured left ventricular ejection fraction (LVEF) ≤ 35%.
- Survivors of cardiac arrest due to VF or unstable VT after formal evaluation by cardiologist to exclude reversible causes
- Patients who meet all current requirements for a cardiac resynchronization therapy (CRT) device and have NYHA Class IV heart failure.

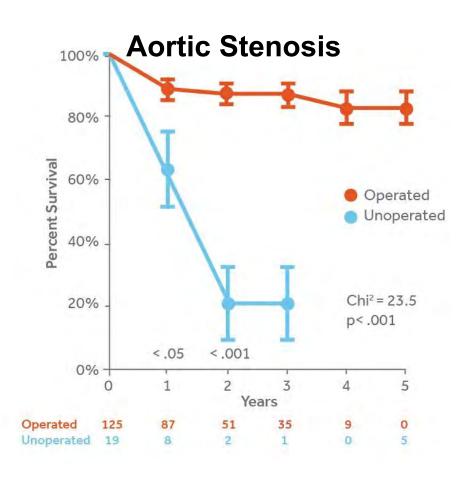
## Surgical Options

#### Surgical Options

- Heart Failure secondary to valvular heart disease
  - Minimally invasive surgical options including Transcatheter Valve Replacement, Mitraclip, minmially invasive open heart surgery
- Left Ventricular Assist Device (LVAD)
- Heart Transplantation

#### Operated vs. Unoperated Patients

- Mortality difference for people with symptomatic AS treated with Aortic Valve Replacement (AVR) versus those not undergoing this procedure is one of the most striking in medicine
- Symptoms Develop
  - Survival 50% at 2 years
  - Survival 20% at 5 years without AVR





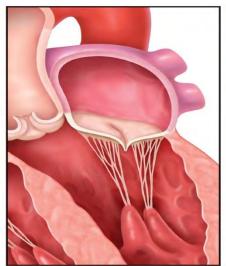
#### Transcatheter Aortic Valve Replacement

- Minimally invasive surgical approach to patients with symptomatic heart disease due to severe native calcific aortic stenosis who are judged by a Heart Team to be at intermediate or high risk for open surgical therapy
- Surgery 1-2 hours- conscious sedation or general
- Discharge 24-48 hours
- Approach: Transfemoral, Transapical, Subclavian, Direct Aortic

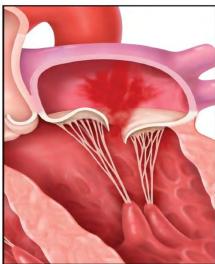
#### MitraClip

#### Indication:

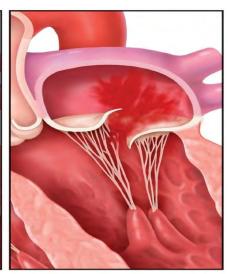
Percutaneous reduction of significant symptomatic mitral regurgitation (MR ≥ 3+) due to primary abnormality of the mitral apparatus [degenerative MR] in patients who have been determined to be at prohibitive risk for mitral valve surgery by a heart team.



NORMAL VALVE



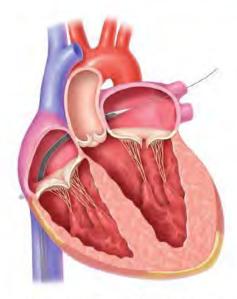
DEGENERATIVE MR — PROLAPSE



DEGENERATIVE MR — FLAIL

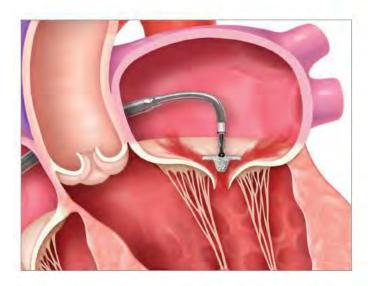
#### MitraClip

#### Transseptal Crossing and Guide Insertion



A transseptal procedure is performed to gain access from the right atrium to the left atrium. The Steerable Guide Catheter (Guide) and Dilator are then carefully advanced into the left atrium over a wire. Once the Guide is in place and secured, the wire and Dilator are removed leaving the Guide in the left atrium.

#### Clip Delivery System Insertion and Steering in the Left Atrium



To introduce the Clip, the Clip Delivery System (CDS) is advanced through the Guide into the left atrium. A series of steering maneuvers and manipulations with the Guide and CDS are required to align the Clip perpendicular to the mitral valve plane, and the Clip Arms perpendicular to the line of coaptation. These maneuvers are done under echocardiographic and fluoroscopic guidance.

#### Heart Team Approach



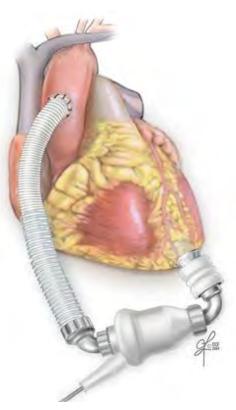


#### Coming Soon to NFRMC

Left Ventricular Assist Device (LVAD) Program

#### LVAD

- Type of mechanical circulatory support
- Indicated for end-stage heart failure
- Bridge to Transplant or Destination Therapy
- Outflow LV, Inflow Aorta



# Patient and Family Education

#### The 5 "M" Method

- Message
- 2. Medicine
- 3. Meals
- 4. Movement
- 5. Mood

# Message

Purpose: Understand the definition of heart failure

You begin the first steps to living successfully with heart failure (HF) by understanding your condition and how to manage it.



#### Medicine

#### Purpose: Improve and control HF, minimize symptoms

- Know what medicine you are taking and what it does
- Have a routine for taking your medicine
- Make a list of your different medicines
- Never take more medicine than prescribed
- Never stop taking your medicine without instruction
- Ask before taking over-the-counter medicines, herbal remedies or vitamins
- Remember your medicine when you travel



#### Meals

#### Purpose: Understand dietary restrictions

- Read Labels!
- Limit sodium intake to less than 2,000 mg per day
- 2,000 milligrams of sodium equals about one teaspoon of salt
- Consult with your physician on fluid restriction

#### Movement

#### Purpose: Understand balance of activity and rest with HF

ACTIVITIES	REST
•Choose lighter activities, such as walking, shopping, less active hobbies	
(sewing, bird watching, model building, movies, book discussion groups, Internet surfing, cardplaying, etc.).	•Rest before you get tired.
	•Rest for 15 to 20 minutes after activity.
<ul> <li>Pace activity and rest during the day, resting frequently to avoid getting tired.</li> </ul>	•Rest one hour after meals.
•Don't lift heavy objects or strain to reach things.	•Rest if you are tired or experiencing pain.
•Avoid temperature extremes. Being too cold or hot places extra stress on the heart.	•When resting, put your feet up to help reduce swelling of the legs, ankles and feet.
•Adjust your routine to avoid inclement weather.	•As you begin to feel stronger, lengthen your activity periods and shorten your rest periods.
•Stand and sit down slowly to avoid lightheadedness.	NORTH FLORIDA

#### Mood

#### Purpose: Accept the diagnosis of HF and live fully

- Support Groups
- Family and Friends
- Meditation
- Light therapy

#### When do I call the Doctor?

- Gain 2 or more pounds in 1 day or 5 or more pounds in 1 week
- Increased swelling in legs
- Worsening shortness of breath
- Excessive fatigue
- Heart rate greater than 120
- Irregular heart beat
- Chest pain with activity or at rest
- Confusion or restlessness
- Get dizzy or lightheaded
- Feel nauseous or don't want to eat much



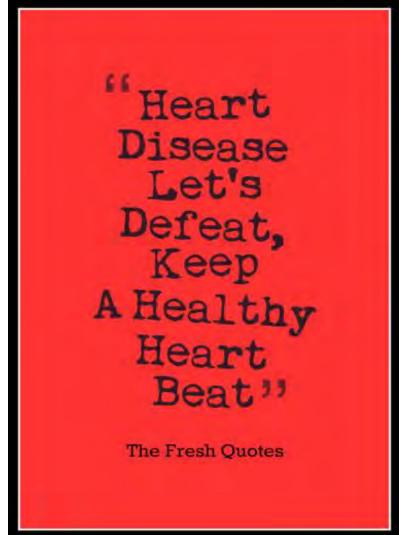
# When do you call the Nurse Practitioner? Whenever you want!

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## **Questions?**







# Understanding Capacity Assessment in Older Adults: Tips for Healthcare Providers

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North Florida Regional Medical Center

\*\*Special note of thanks to Lindsay Bolton, OHS student intern, in assistance with preparation with this presentation

# Learning Objectives

- Name two ethical issues involved in patient capacity
- List three myths of capacity
- Identify the components of capacity
- Identify clinical situations in which assessing capacity is recommended
- List key factors to consider when assessing various types of capacities, such as medical decision making, financial, and driving
- Name at least two interventions that address diminished capacity

# Rates of Incapacity

- Eighteen to thirty-five percent of medicine inpatients lack capacity.
- On average, 44% of nursing home bound, 54% of Alzheimer's, and 68% of learning disabled patients lack capacity.

Appelbaum, PS. "Assessment of Patients' Competence to Consent to Treatment". N Engl J Med. vol. 357. 2007. pp. 1824-40.

# Ethics and Capacity

- Assessments of patient capacity aim to balance the ethical norms of autonomy (self-determination) and beneficence (protection).
- The finding of incapacity may result in the removal of a patient's rights.

# What is Capacity Assessment?

- Cognitive assessment
- Cognitive deficits (more so than affective or psychotic symptoms) predict impairment in decisional capacity
- Cognitive domains necessary for informed decision making are: memory, language, executive function (planning, sequencing, organizing)
- Determines whether a patient can participate in their own care on their own

# What Capacity Assessment is NOT

- An assessment that has to be done by a mental health professional, although second opinions can be helpful
- Solely dependent on diagnosis
- Determined only by a score on a cognitive screen (MoCA, MMSE, etc.)
- Determination of who the health care surrogate decision maker should be
- Determine of final treatment plan
- Does not carry legal weight outside of the hospital setting –not equivalent with guardianship (e.g., competence)

# Myths of Capacity

- Decision-making capacity = competency.
- Against medical advice = lack of decision-making capacity.
- There's no need to assess decision-making capacity unless a patient goes against medical advice.
- Decision-making capacity is all or nothing.
- Cognitive impairment = no decision- making capacity.
- Lack of decision-making capacity is permanent.

# Myths of Capacity (Cont.)

- Lack of decision-making capacity is permanent.
- Patients who have not been given relevant information about their condition can lack decision-making capacity.
- All patients with certain psychiatric disorders lack decisionmaking capacity.
- All institutionalized patients lack decision-making capacity.
- Only psychiatrists and psychologists can assess decision-making capacity.

Source: Ganzini L, Volicer L, Nelson WA, Fox E, Derse AR. Ten myths about decisionmaking capacity. J Am Med Dir Assoc. 2004;5(4):263-267.



# Components of Capacity

- The four key components to address in a capacity evaluation include (Grisso & Appelbaum, 1998):
  - Communicating a clear and consistent choice
  - Understanding relevant information
  - Appreciation of the information by applying it to one's personal situation (insight)
  - Rationalization/reasoning

#### Communication

- The patient needs to be able to express a stable treatment choice
- Changing one's decision in itself would not bring a patient's capacity into question, so long as the patient was able to explain the rationale behind the switch.
- Frequent changes back and forth in the decision-making, however, could be indicative of an underlying psychiatric/medical disorder or extreme indecision, which could bring capacity into question.

(Dastidar & Odden, 2011)



#### **Doctrine of Informed Consent**

- Disclosure of pertinent information
- Decision-making capacity
- Voluntariness free and genuine choice made without coercion

(Faden and Beauchamp, 1986)

\*\*Capacity assessment cannot be determined until after patients are fully informed\*\*\*



### **The Optimal Consent Process**

- Informed consent process = information sharing process
  - Full disclosure of relevant information purpose, risks, benefits, alternatives
  - Questions must be elicited and answered
  - May require more than one discussion
- Decision-Making Capacity Assessment (if needed)
  - Focused on the specific decision
  - Systematic and structured review
- A well-informed choice is communicated
  - Genuine
  - Reflects personal values



# Understanding

- The patient needs to recall conversations about treatment, to make the link between causal relationships, and to process probabilities for outcomes.
- Problems with memory, attention span, and intelligence can affect one's understanding.

## Appreciation

- The patient should be able to identify the illness, treatment options, and likely outcomes as things that will affect him or her directly.
- Causes of a lack of appreciation
  - Usually stems from a denial based on intelligence (lack of a capability to understand)
  - Emotion
  - A delusion that the patient is not affected by this situation the same way and will have a different outcome.

(Dastidar & Odden, 2011)



# Rationalization and Reasoning

- The patient needs to be able to weigh the risks and benefits of the treatment options presented to come to a conclusion in keeping with their goals and best interests, as defined by their personal set of values.
  - This often is affected in psychosis, depression, anxiety, phobias, delirium, and dementia.

Appelbaum PS, Grisso T. Assessing patients' capacities to consent to treatment. *N Engl J Med.* 1988;319(25):1635-1638.



# When to Assess Capacity

- When patients have changes in mental status
- When patients refuse recommended treatments, especially when they are not willing to discuss the refusal, when the reasons for the refusal or unclear, or when the refusal is based on misinformation or irrational basis

# When to Assess Capacity (Cont.)

- When patients consent to particularly risky or invasive treatment to hastily and without careful consideration of the risks and benefits
- When patients have a known risk factor for impaired decision making
  - Chronic neurologic or psychiatric conditions
  - Significant cultural or language barrier
  - An educational level concern
  - An acknowledged fear of discomfort with institutional health care settings
  - At an age at either end of the life spectrum ( < 18 years or >85 years old)

(Tunzi, 2001)



## **Nuances of Capacity**

- Impairment in decisional abilities (capacity) occurs along a continuum from mild to severe impairment
- Decisions vary in complexity from simple or concrete to complex or abstract
- The <u>same</u> individual may have sufficient capacity to participate in a simple decision but lack capacity to participate in a more complex decision –hence the need for 'focused assessment'
- Understanding can improve with further explanation or repetition

# Risk: Benefit Ratio – A Sliding Scale Concept of Capacity

Decision	Likely Beneficial outcome and/or low risk	Likely Poor Outcome and/or High risk
Accept	Low	HIGH
Refuse	HIGH	Low

Roth et al. Tests of competency to consent to treatment. AM J Psychiatry 1977;134:279-284.;

Drane JF. Competence to give an informed consent. JAMA 1984; 252:925–927.



# AN ALGORITHM FOR ASSESSING DECISION-MAKING CAPACITY

- 1. Do the history and physical examination confirm that the patient can communicate a choice?
- 2. Can the patient understand the essential elements of informed consent?
- 3. Can the patient assign personal values to the risks and benefits of intervention?
- 4. Can the patient manipulate the information rationally and logically?
- 5. Is the patient's decision-making capacity stable over time?

Miller SS, Marin DB. Assessing capacity. Emerg Med Clin North Am 2000; 18:233-241.

NOR NOR

# How to Assess Capacity

- Directed Clinical Interview
- Formal capacity tool

#### Patient Abilities to be Assessed

- Questions to determine the ability of the patient to understand about treatment and the proposed options for care:
  - What is your understanding of your condition?
  - What are the options for your situation?
  - What is your understanding of the benefits of treatment and what are the odds that the treatment will work for you?
  - What are the risks of treatment and what are the odds that you may have a side effect or bad outcome?
  - What is your understanding of what will happen if nothing is done?

## Patient Abilities to be Assessed (Cont.)

- Questions to determine the ability of the patient to appreciate how that information applies to their own situation:
  - Tell me what you really believe about your medical condition.
  - Why do you think your doctor has recommended (name of specific treatment or test) for you?
  - Do you think it (specific treatment/test) is the best treatment/test for you? Why or why not?
  - What do you think will actually happen to you if you accept this treatment? If you don't accept it?



## Patient Abilities to be Assessed (Cont.)

- Questions to determine the ability of the patient to reason with that information in a manner that is supported by the facts and the patient's own values:
  - What factors/issues are most important to you in deciding about your treatment?
  - What are you thinking about as you consider your decision?
  - How are you balancing the pluses and minuses of the treatments?
  - Do you trust your doctor? Why or why not?
  - What do you think will happen to you now?

## Patient Abilities to be Assessed (Cont.)

- Questions to determine the ability of the patient to communicate and express a choice clearly:
  - You have been given a lot of information about your condition. Have you decided what medical option is best for you right now?
  - We have discussed several choices; what do you want to do?

(Cited from Tunzi, 2001)

## Components of Capacity Assessment

(Dastidar & Odden, 2011)

Component	Patient's role	Physician's approach	Sample questions	Impaired in
Communication	Express a treatment choice	Ask patient which treat- ment option they prefer	Have you decided whether to get X or Y treatment?	Psychiatric disorders; extreme (pathologic) indecision
Understanding	Recall information, link causal relationships, process general proba- bilities	Ask the patient to para- phrase their view of the situation	Can you tell me how you view the current situation? How likely do you think that X will happen to you?	Problems with memory attention span, intelli- gence
Appreciation	Identify illness, treat- ment options, and prob- able outcomes as it relates to them	Ask patient to describe disease, treatment, out- comes, and probabilities as they apply to them	What do you think is wrong with your health? What treatments do you think would help? What do you think is your alternative?	Denial; delusional disorder
Rationalization	Weigh risks and bene- fits to come to a conclu- sion in keeping with patient's goals	Ask the patient to com- pare risks vs. benefits of the proposed treatment and alternatives	What made you choose option X? Why do you think option X is better than option Y?	Depression, psychotic thought disorder, depression, anxiety, phobia, delirium, dementia

## Clinical Frameworks for Assessing Capacity

- Some clinical situations in which clinical assessments may be recommended include:
  - Medical conditions
  - Lack of cognition
  - Decrease in ability to function in an ordinary, everyday setting
  - Decrease in ability to express individual ideas and opinions
  - Increase in need for supervision

## Medical Capacity

- Is the patient well enough to make their own medical decisions?
- Four standards are in place to assess medical capacity
  - Can the patient...
    - express a choice
    - 2. understand the treatment ahead of them
    - 3. understand their own situation
    - evaluate their treatment and state rational explanations to processed information
- If one is not well enough to make their own medical decisions they can appoint a health-care proxy

Appelbaum & Grisso, 1988 Drane, 1985 Roth, Meisel & Lidz, 1977 Tepper & Elwork, 1984



## Driving Capacity

- In America, 3.48 million elderly people over the age of 85 were reported to drive in 2013
  - In 1998, only 1.76 million were reported to be driving
- Common conditions that impede the elderly from driving include...
  - neurological disorders
  - psychiatric conditions
  - chronic health conditions
- Assessing driving capacity relies on a patient's ability to...
  - possess mental flexibility
  - 2. use insight
  - have efficient processing speeds



## Driving Capacity

- Tips for working with older adults and their families around driving issues:
  - Be alert to triggers indicating a potential driving problem
  - Consider compensatory strategies
  - Monitor the older adult's functioning in order to intervene as necessary

Knapp and Vandecreek, 2005

## Driving Capacity

- Both informal and formal assessments available, such as driving simulations
  - AARP offers an online driving simulation on their website
    - https://www.aarp.org/auto/driver-safety
  - Association for Driver Rehabilitation online directory of member sites that can offer a driving simulation test or road test for older adults
    - www.aded.net

## Financial Capacity

- Severe economic and legal repercussions can occur from a diminished financial capacity.
  - Declining credit ratings, loss of property, etc.
  - Vulnerability to scams and fraud both online and in person
- Three levels of financial capacity
  - Specific financial tasks and abilities
  - 2. Broader domains of financial activity
  - 3. Overall financial tasks
- Financial capacity can be assessed through clinical interviews, self-reports, or with a formal assessment.



## Assessing Financial Capacity

- Clinical Interview
  - Should address broad domains of financial activity
    - Checkbook management
  - Should assess also the specific financial tasks that support these activities
    - Writing a check, writing it in a check register, etc.
- Semi-Structured Clinical Interview for Financial Capacity (SCIFC) (Marson et al, 2006)
  - Healthcare professional makes capacity judgments for eight domains and overall financial capacity



#### Formal Assessment Tools

- MMSE bedside assessment of patient's cognitive function
  - >24 has negative likelihood ratio of 0.05 for lack of capacity
  - Scores 17-23 do not correlate well with capacity
  - Limited in that it does not address specifically informed consent (understanding and choice)
- MacArthur Competence Assessment Tool (MacCAT)
  - A lengthy, comprehensive tool designed for patients with complex psychiatric or neurological conditions whose capacity determination is especially difficult
  - Takes about 30 mins to administer and score

### Formal Assessment Tools (Cont.)

- Aid to Capacity Evaluation (ACE)
  - Short more clinically oriented tool that can be administered and scored in about 10 mins (see Tunzi, 2001 for example)
  - The Aid to Capacity Evaluation (ACE) has been validated in medical inpatients, is based on the actual decision the patient is making
  - It is available free online for non commercial use (http://www.jcb.utoronto.ca/tools/documents/ace.pdf)

### Formal Assessment Tools (Cont.)

- Capacity to Consent to Treatment Instrument (CCTI):
  - Uses hypothetical clinical vignettes in a structured interview to assess capacity across all four domains
  - 20-25 mins to complete
- Hopemont Capacity Assessment Interview (HCAI)
  - Utilizes hypothetical vignettes in a semi-structured interview format to assess understanding, appreciation, choice, and likely reasoning
  - Takes 30-60 mins to complete

#### Interventions

- Still an emerging field
- Interventions can help to prevent the necessity of legal determinations.
- Two primary types of interventions
  - 1. Environmental interventions
  - 2. Family interventions

**Qualls**, 2007



## Family Interventions

- Education is imperative for every caregiver to receive before providing help.
  - Caregivers must have a significant understanding of the disease their loved one is going through.
  - They should be able to give...
    - Clear statements about the behavioral complications they'd be witnessing
    - Suggestions for improving the environment of their patient
    - 3. General statements about the diagnosis
    - Statements about safety issues they would need to monitor



## Family Interventions (Cont.)

- Helps families to be supportive and influence safety while also being sure to stay within their financial constrictions.
  - It is important to establish a trusting network of caregivers within a family in order to remove stress from each individual.
    - Communication is key

#### **Environmental Interventions**

- Helps to increase the autonomy of a patient through environmental measures such as a beginning healthy diet, utilizing assistive technology, or creating a positive social atmosphere.
  - Ex.) A patient with dementia who exhibits the symptom of wandering could be helped through the placement of certain objects and textures.



## Environmental Interventions (Cont.)

- Restricted Access Strategy
  - Particular times of day or parts of a setting may cause a particular issue for a patient.
    - Restricting a person's access to said damaging environments may increase their quality of life.
- Enhanced Access Strategy
  - Certain technologies that allow increased access to family and friends, telling a person what "to do" instead of what "not to do", and the providing of a favorite food or activity are all examples of helpful enhanced access.

#### Documentation

- Clinicians should be thorough in documenting details in coming to a capacity determination, both as a means to formalize the thought process running through the four determinants of capacity, and in order to document for future reference.
  - "The patient is (is not) able to articulate a well-informed, reasonable, and rational understanding of her current medical situation and options for treatment with no (with) significant cognitive impairments hindering her ability to make his/her own medical decision in regard to medical decision X.... "

### Case Example

- A 54-year-old woman with diabetes and schizophrenia has been hospitalized with unstable angina, bilateral heel ulcers, urinary retention caused by an acute urinary tract infection and anemia caused by a combination of gastritis and chronic renal failure. One year ago, she was hospitalized with diabetic ketoacidosis after reporting that "voices" told her to stop taking her insulin.
- Currently, she is improving but requires a urinary catheter and must keep her legs elevated at rest. She says she is now able to take care of herself and wants to return home. Does this patient have the capacity to make this decision?

### Follow Up

- The 54-year-old woman with schizophrenia and multiple medical problems reported that she was not now hearing voices nor was she exhibiting any other psychotic symptoms.
- She had been very stable on her psychiatric medications for several months. The patient understood her medical situation, appreciated the consequences of care options, analyzed logically the information she was given and was able to express a clear choice.
- She was judged to have capacity.
- After learning self-catheterization, demonstrating knowledge of her medication regimen and agreeing to home health nursing care, she returned home and returned for follow-up visits as directed

## Case Example - Poor decision or Lack of Capacity?

- Ms. Clark is an 83 y.o. female with NIDDM, HTN brought to ED by friends who stated that she did not seem herself. In the ED, she complained of dizziness, and was admitted for a glucose of 450. She was alert and oriented to herself, location and approximate date (missed date and day). MMSE was +23/30. She was restarted on usual meds and within a few days was ready for d/c.
- The medical team was concerned that this was her third admission in one year for similar problems - presumably related to not being adherent to her medication regimen. Team requested a consult for decisional capacity to take her medications.

### Ms. Clark's Capacity Assessment

- On exam, Ms. Clark was able to name her medical conditions, state that she did want to take her medication, and could in layman's terms, explain why she needed to take medication every day.
- Could not state the names of her pills or how much she was supposed to take but knew that her bottles provided her with this information. She said that she kept the pill bottles in a row on her bathroom counter. "That way I never forget to take my pills."
- When asked about missing pills, she promptly stated 'no'. When pressed replied - 'maybe once a month'.

# Does Ms. Clark have sufficient capacity around her meds?

- Able to express a choice?
- Able to demonstrate understanding?
- Able to demonstrate rational reasoning?
- Able to demonstrate appreciation?
- Is she in immediate/eminent danger to herself?

#### Ms. Clark's Plan

- Ms. Clark was found to lack capacity due to not being able to demonstrate adequate appreciation of her inability to remember to take her medications.
- Team had discussed moving to ALF however Ms. Clark refused, stating that she was managing 'just fine' at home.
- Ms. Clark did not demonstrate an accurate appreciation for how she was managing at home - BUT she also did not meet the threshold of 'immediate' danger to self required to be placed against her will

### Case Comparison

- What factors to consider with similar presenting medical and psychosocial factors?
- Example of Mr. B and Mr. C

#### Mr. B

- 78 y.o.
- Lives alone
- Falling
- On coumadin s/p CVA
- OT/PT deconditioned, poor ADLS, benefit from rehab
- Pt refuses

#### Mr. C

- 78 y.o.
- Lives alone
- Falling
- On coumadin s/p CVA
- OT/PT deconditioned, poor ADLS, benefit from rehab
- Pt refuses



#### Mr. B

- Choice Go home
- Understanding "Nh staff can quickly assist me if I fall and goal of rehab is to make me stronger"
- Appreciation "I fall, I am on coumadin, so I could fall and bleed to death"
- Rational reasoning quality of life, previous bad experiences in NH

#### Mr. C

- Choice Go home
- Understanding "Nh is for folks who can't take care of themselves"
- Appreciation "I don't fall, I'll be fine. Why would I bleed to death..I'm not going to fall.."
- Rational Reasoning "I don't need it. I can take care of myself"

#### Mr. B

#### Able to:

- State a choice
- Demonstrate general understanding
- demonstrate appreciation
- exhibit rational reasoning

Has capacity – must honor his request to go home, consider home health, APS, alarm bracelet, other friend/family involvement if possible

#### Mr. C

#### Able to:

- State a choice
- Demonstrate general understanding
- •Not able to:
- •demonstrate appreciation
- exhibit rational reasoning
- •Lacks capacity –
  pursue placement,
  guardianship might be
  required to do so if he
  remains unwilling

#### Conclusions

- Capacity is a cognitive assessment that evaluates an individual's comprehension and assimilation of a thorough informed consent discussion.
  - Understanding, appreciation, rational reasoning, and choice
- Not competency but rather is a functional assessment regarding a particular decision
- Capacity can is not static, can change and fluctuate over time
- Does not determine who health care surrogate should be
- Does not require a mental health provider -but a second opinion can be helpful at times

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## BREAK





COPD: Learn More Breathe Better

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

# Learnh More Shortness of Breath Feeling of Shortness of Breath Feeling of Shortness of Breath More Shortness of Breath Learnh More Shortness of Breath Learnh More Better Shortness of Breath Breath Better of Breath Feeling of Shortness of Breath Feeling of Breath Fe

Abid Khokar, MD North Florida Pulmonary & Sleep Medicine

**COPD** Learn More Breathe Better



#### Today's Session Will Cover

- Definition of COPD
- How COPD affects breathing
- Symptoms of COPD
- How you can find out if you are at risk
- Talking to your doctor
- Getting on the road to better lung health
- Resources





#### What is COPD?

- <u>Chronic Obstructive Pulmonary Disease</u>
- Serious lung disease that over time makes it hard to breathe
  - **Emphysema**
  - **Chronic Bronchitis**
- Blocked (obstructed) airways make it hard to get air in and out



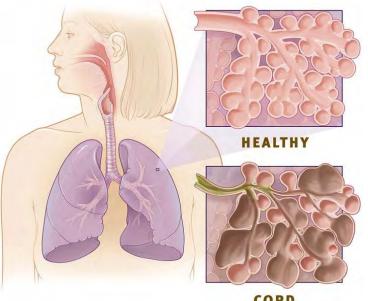


#### Did You Know?

- 4<sup>th</sup> leading cause of death
- Kills more than 120,000 people per year
- 2<sup>nd</sup> leading cause of disability
- 12 million+ have COPD
- Another 12 million may have it but don't know it



# How Does COPD Affect Breathing?

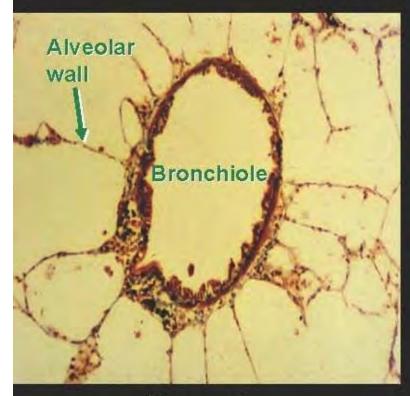


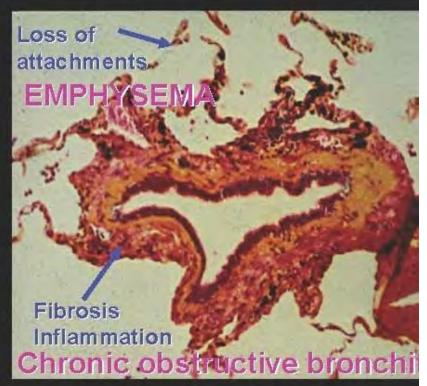
COPD



## PATHOLOGY OF COPD

#### Peripheral lung





**Normal** 

lanuel Cosio

COPD



#### What Are the Symptoms?

- Coughing "smoker's cough"
- Shortness of breath
- Excess sputum or phlegm
- Feeling like you can't breathe
- Can't take deep breath
- Wheezing





## Symptoms

#### When it's hard to breathe, it's hard to do anything

- •People with COPD:
  - avoid activities that they used to do more easily
  - limit activity to accommodate shortness of breath and other symptoms.
     Some activities include:
    - Take elevator instead of stairs.
    - · Park close by instead of walking.
    - Avoid shopping or other similar day-to-day tasks.
    - Stay home rather than go out with friends.



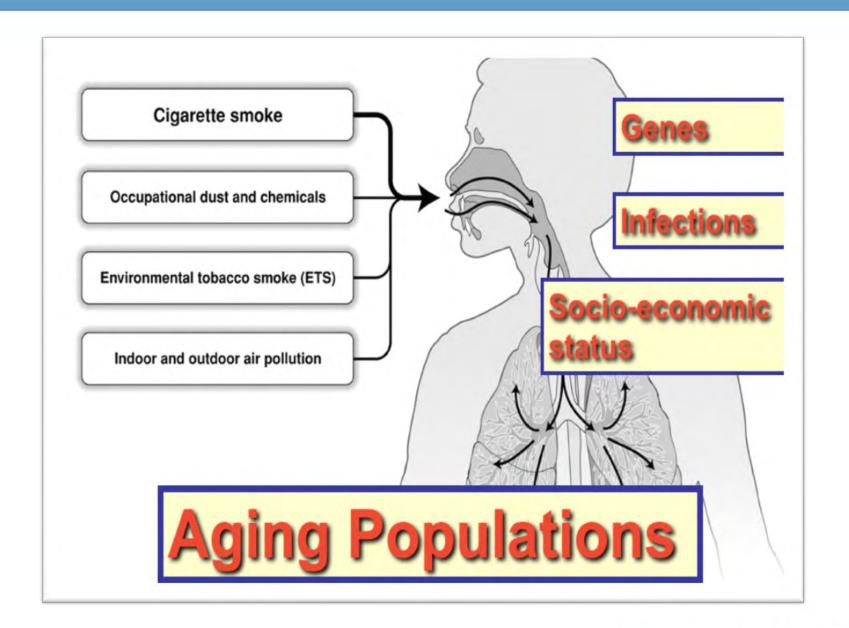


#### Are You At Risk?

- Smoking
  - Most common cause, however, as many of 1 out of 6 people with COPD never smoked
- Environmental exposure
  - Chemicals, dusts, fumes
  - Secondhand smoke, pollutants
- Genetic Factor
  - Alpha-1 antitrypsin (AAT) deficiency







# Associated Illnesses with COPD

- CAD
- CONGESTIVE HEART FAILURE
- PULMONARY HYPERTENSION
- DIABETES
- LUNG CANCER



#### Getting a Simple Breathing Test

- Talk with your doctor!
- Simple breathing test
- Spirometry
- Quick and noninvasive
- Can tell if you have COPD and how severe it is





#### Treatments Can Help

- Lifestyle changes
- Quit smoking. It's never too late. (www.smokefree.gov)
- Medications
- Pulmonary rehabilitation
- Physical activity training
- Oxygen treatment
- Surgery
- CPAP/BiPAP





#### Start Today

- Talk with doctor about your risks, such as smoking and other exposures
- Tell your doctor about any symptoms
- Write down a list of questions



## There Are Many Things You Can Do

- Quit smoking—Many new options available from your doctor
- Avoid exposure to pollutants and secondhand smoke
- Visit your doctor regularly
- Follow treatment advice
- Get annual flu and pneumonia shots





#### Common Myths— Don't Believe Them

- "My shortness of breath is just old age."
- "There's nothing my doctor can do except tell me to quit smoking."
- "If I rest more, it will get better."



#### It All Begins With You

- Start today
- Be your own advocate—ask questions and seek information.



#### **Learn More Breathe Better**

www.LearnAboutCOPD.org or

NHLBI Health Information

Center

P.O. Box 30105 Bethesda, MD

20824-0105

Phone:301-592-8573

TTY: 240-629-3255

Fax: 301-592-8563

E-mail:

NHLBlinfo@nhlbi.nih.gov

Web site: www.nhlbi.nih.gov









# "Effective" Therapeutics

Will Winkler, RRT

- Posture
- Pursed Lip Breathing
- Room temperature
- Medication delivery
- Lung expansion therapy (IS)
- Mucus clearance therapy
- Diet
- Exercise
- Oxygen therapy
- Vaccinations / PCP checkups
- Continued education

# Presentation Topics:



**COPD "obstacles"** 

Hyper expanded alveoli

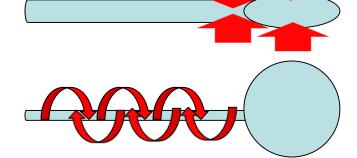
( airway ) ( alveoli )

Compressed alveoli

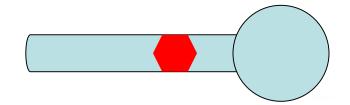
Bronchiolar constriction

**Atelectasis** 

Mucus blockages







# Posture

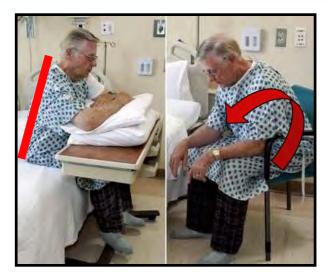
## "Tripoding"

 physical stance where the patient sits <u>or</u> stands, and they support their upper body with their two arms; thought to maximize accessory muscles use

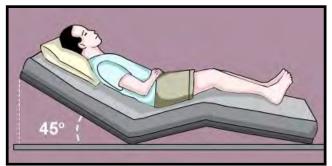


- ideally sitting straight allows lungs to expand fully
- Lying in bed
  - Semi-fowler <u>or</u> fowler



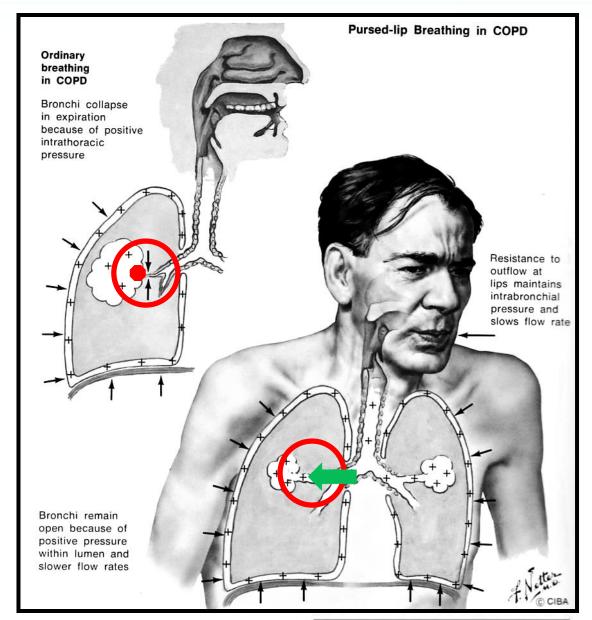






# Pursed Lip Breathing

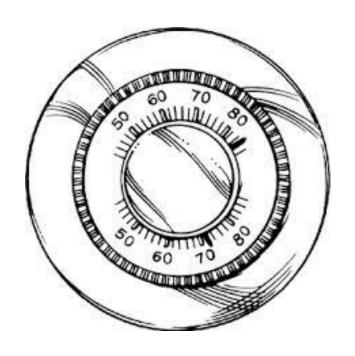
Pursed lips create a resistor to expiratory flow, thereby creating back pressure and stinting open collapsed airways.





# Room temperature

- Most COPD patient's report "less" dyspnea with <u>cooler</u> room temperatures.
- Little research on this phenomenon.
- Mostly clinical observations.



# Pharmaceuticals



- Bronchodilators ("rescue meds"):
  - Short acting Albuterol, Atrovent, Duoneb / Combivent
  - · Long acting Spiriva, Serevent, Brovana
  - Inhaled corticosterioids / anti-inflammatory:
    - · Flovent, Pulmicort, QVAR, Asmanex
  - **Combination –** Long acting bronchodilators and anti-inflammatory
    - Advair, Symbicort
  - **Smoking cessation medications**
  - Antibiotics



# Order of medications

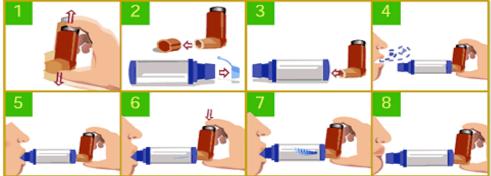
R

- **#1- Bronchodilators**
- #2- Inhaled corticosterioids
- #3- Combination drugs
  - Generally believed that bronchodilators should be used first, to open up the airways for the more potent medications to follow.
  - But there is little conclusive research to support this approach.
  - Mostly the order is tailored to the individual patient's needs or normal routine.

#### Spacers/ Chambers



- Device used in conjunction with MDI's
- "Spacers" have a reservoir for the aerosol particles
- "Chambers" also have a one-way leaflet valve to conserve medication, & act like a reservoir
- "Chambers" eliminate the need for patient synchrony of inspiration & activation
- Have signaling device to ensure proper inspiratory flow & better deposition



# Incentive Spirometers

#### Indications for Incentive Spirometry

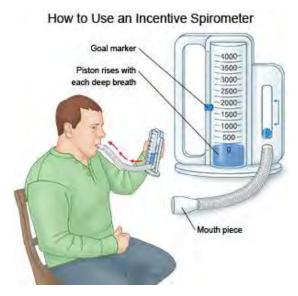
- Presence of pulmonary atelectasis
- Presence of conditions predisposing to atelectasis:
  - Upper abdominal surgery
  - Thoracic surgery
  - Surgery in patients with COPD
- Presence of a restrictive lung defect associated with quadriplegia and/or dysfunctional diaphragm

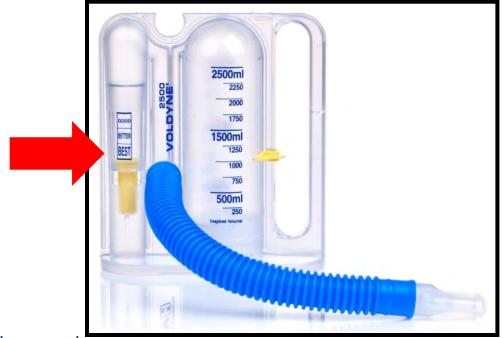


- Goal: sustained maximal inspiratory effort to prevent or correct atelectasis
- Overcome discomfort associated with deep breathing
- Simple and inexpensive



# IS Procedure





- Set an initial goal
- Inspire slowly and deeply
- Sustain breath <u>hold</u> for 5-10 seconds with each effort
- Patient should do 5-10 IS breaths / hour while awake

REGIONAL HEALTHCARE

# Outcomes of IS

#### Potential Outcomes of Incentive Spirometry

- Absence of or improvement in signs of atelectasis
- Decreased respiratory rate
- Normal pulse rate
- · Resolution of abnormal breath sounds
- Normal or improved chest radiograph
- Improved PaO<sub>2</sub> and decreased PaCO<sub>2</sub>
- Increased SpO<sub>2</sub>
- Increased VC and peak expiratory flows
- Restoration of preoperative FRC or VC
- Improved inspiratory muscle performance and cough
- Attainment of preoperative flow and volume levels
- Increased FVC





# "Flutter valve" -

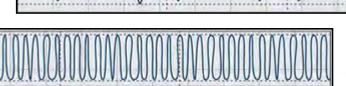
delivers PEP & asymmetrical oscillation; this asymmetrical oscillation is produced by uncontrollable "flapping" of inner bladder; non-gravity dependent device; may be used with a nebulizer; oscillation begins at ≥ 5 cmH2O of pressure; goal is to achieve 1:3 or 1:4 l:E ratio; cleans easily





*asymmetrical* oscillation

symmetrical oscillation







# Diet

- Approximately 30% of patients with severe COPD do <u>not</u> eat enough due to SOB; leading to fatigue.
- TRY- small frequent, easy to prepare meals/ snacks
- TRY- rest before meals
- TRY- daily multivitamin
- TRY- nutritional supplements (bars or liquids)
- Not eating enough can lead to malnutrition, worsening symptoms and increase the chance of infection.

# Exercise

- Improve circulation & oxygen distribution
- Increase energy levels
- Strengthen heart & overall cardiovascular system
- Increase endurance
- Lower blood pressure
- Improve muscle tone & strength; improve balance
- Strengthen bones & joint flexibility
- Help achieve a healthy weight if needed
- Help reduce stress, tension, anxiety, & depression
- Improve sleep & perhaps cognition



# Oxygen therapy

 Long-term oxygen therapy is recommended for COPD patients with severe resting chronic hypoxia.



- Shown to improve survivability.
- Not shown to significantly impact patients with mild COPD.
- SpO2 ≤ 88% required for Home O2

# Oxygen therapy

Objectives of O<sub>2</sub> therapy

#1) correct acute hypoxemia

Diagnosed by an ABG

Mild hypoxemia

Moderate hypoxemia

Severe hypoxemia

60-80mmHg PaO2

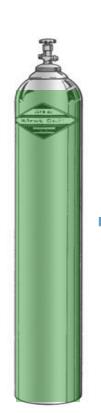
40-60mmHg PaO2

<40mmHg PaO2

#2) Alleviate symptoms associated with:

- ► chronic hypoxemia (associated with obstructive or restrictive diseases)
- ►helps to decrease WOB and
- ▶increase exercise tolerance





# 4

# Oxygen therapy

#3) Decrease workload of cardiopulmonary system



- Heart compensates for hypoxemia by increasing cardiac output.
- Chronic hypoxemia may cause constriction of pulmonary arterioles leading to pulmonary hypertension.
- Chronic hypoxemia may cause polycythemia (excess number of red blood cells). This increases the viscosity of the blood requiring more driving pressure from the heart.

COPD "therapeutics"

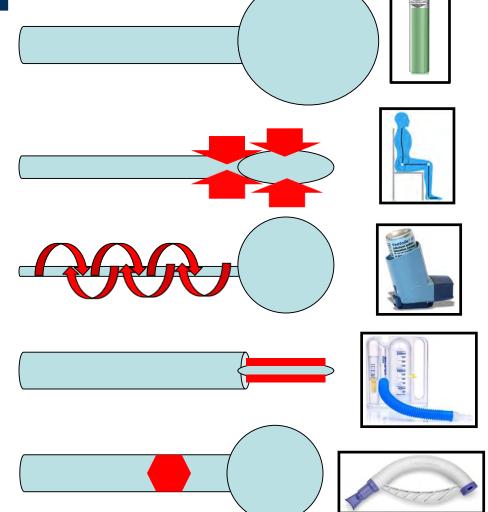
Hyper expanded alveoli

Compressed alveoli

Bronchiolar constriction

**Atelectasis** 

Mucus blockages





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- ■thoracic.org/
- ■uptodate.com/
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- **■Egan's Fundamentals of Respiratory Care –** 10<sup>th</sup> Edition
- ■teleflex.com/ (Pocket Chamber)
- ■vibrapep.com/ (VibraPEP™ / "flutter valve")
- ■teleflex.com/ (VOLDYNE 5000 Incentive Spirometer)







## LUNCH



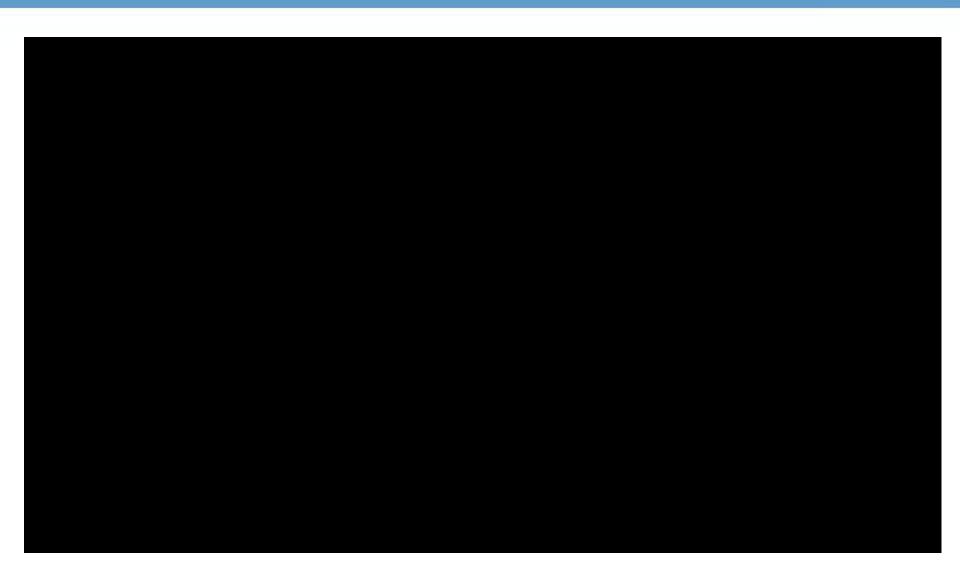


# "Stop the Madness" Transitions of Care in Geriatric Patients

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#### Objectives

- Review Aging Population Statistics and Identify Challenges in Geriatric Medicine
- Define Transitions of Care and Identify Challenges in Geriatric Patients
- Review the Medication Reconciliation Process and How it Effects Transitions of Care
- Review Transitions of Care Case Studies in Geriatric Patients
   Focusing on Medication Reconciliation
- Provide Tools/Ideas to Help Improve Transitions of Care in Geriatric Patients







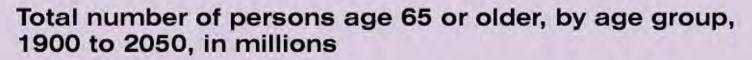


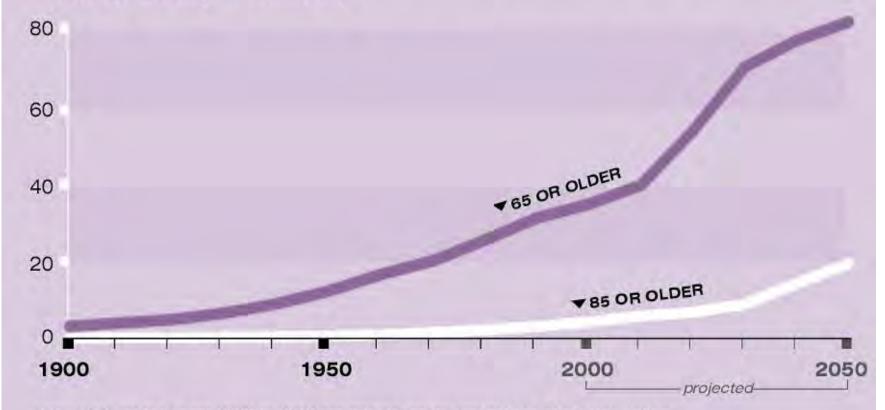






Eighty-five year old Katherine Beiers, running her 14the marathon is one of the last runners through Newton.





Note: Data for the years 2000 to 2050 are middle-series projections of the population.

Reference population: These data refer to the resident population.

Source: U.S. Census Bureau, Decennial Census Data and Population Projections.



#### Challenges in Geriatric Medicine

- There are approximately 7,500 certified geriatricians in the US.
- It is estimated that approximately 30,000 geriatricians will be needed by 2030.
- 80% of patients 65 years and older have at least 1 chronic condition and 68% have 2 or more.
- Medication Use
  - Older adults make up approximately 14.5% of the US population but account for approximately 33% of all prescription medications.
  - 1 in 5 prescriptions are potentially inappropriate
  - Approximately 30% of hospitalizations of persons aged <u>></u>65 may be linked to drug toxicity or other drug related problems.
  - Single greatest predictor of adverse events is the number of medicines a patient is taking ("polypharmacy").



#### Common Chronic Conditions for Adults 65+

**Unick Facts** 

80% have have at least 1 chronic condition



68% have 2 or more chronic conditions



Hypertension (High Blood Pressure) 58%



**High Cholesterol** 47%



Arthritis 31%



Ischemic Heart Disease (c) Coronary Heart Disease)

29%



Diabetes 27%



Chronic Kidney Disease 18%



Heart Failure 14%



Depression 14%



Alzheimer's Disease and Dementia

11%



Chronic Obstructive **Pulmonary Disease** 

11%

Source: Carmers for Marticare & Menticard Services: Coverer Covertions Vegyalentic Statis County Statis All File for Service Services. 2015



ncoa.org

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#### Medication Use in Geriatric Patients

- Pharmacokinetic & Pharmacodynamic Alterations
- Multiple co-morbid diseases
- Multiple medications (polypharmacy)
  - Drug-drug interactions
  - Compliance
- Lack of education
- Memory loss/Dementia
- Cost
- Use of multiple pharmacies
  - Mail order vs. Retail



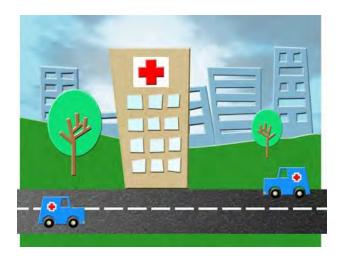
## Emergency Hospitalization for ADEs in Older Americans

- 99,628 emergency hospitalizations for ADEs in U.S. adults 65 years or older each year from 2007 through 2009.
- Nearly half of these hospitalizations were among adults 80 years of age or older
- 2/3 were due to unintentional overdoses
- Four medications or medication classes were implicated alone or in combination:
  - Warfarin
  - Insulins
  - Oral anti-platelet agents
  - Oral hypoglycemic agents

#### Transitions of Care

#### CMS definition:

 "The movement of a patient from one setting of care (hospital, ambulatory primary care practice, long-term care, home health, rehabilitation facility) to another."



#### CMS Hospital Readmission Reduction Program

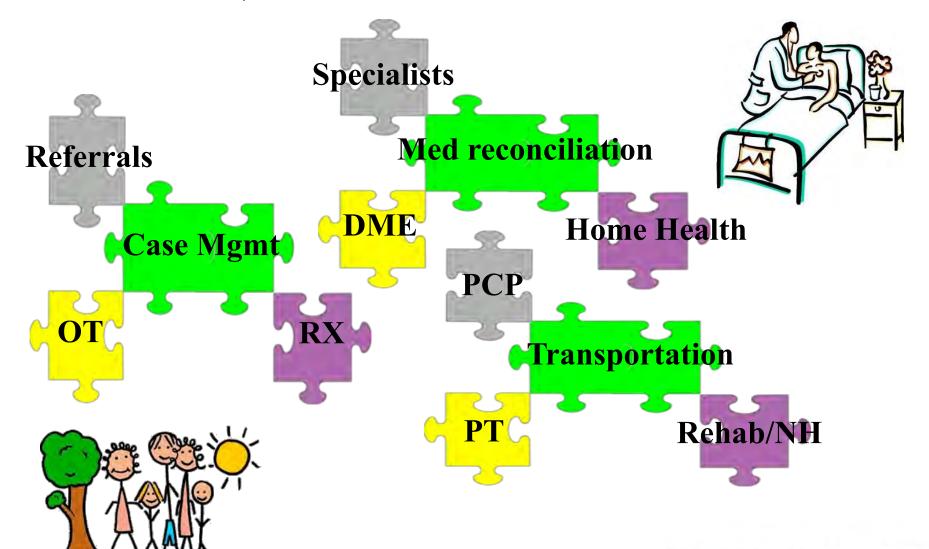
Year penalty applied	FY2013	FY2014	FY2015
Performance (measurement) period	June 08-July 11	June 09-July 12	June 10-July 13
Diagnoses of initial hospitalization	Heart attack Heart failure Pneumonia	Heart attack Heart failure Pneumonia	Heart attack Heart failure Pneumonia COPD Hip or knee replacement
Maximum penalty	1%	2%	3%

#### Medicare All-Condition Readmission Rate by Age





#### Components of Transitions of Care



#### Challenges with Transitions of Care

- Low level of patient activation
- Lack of standardized and generally known processes
- Inadequate transfer of information across settings



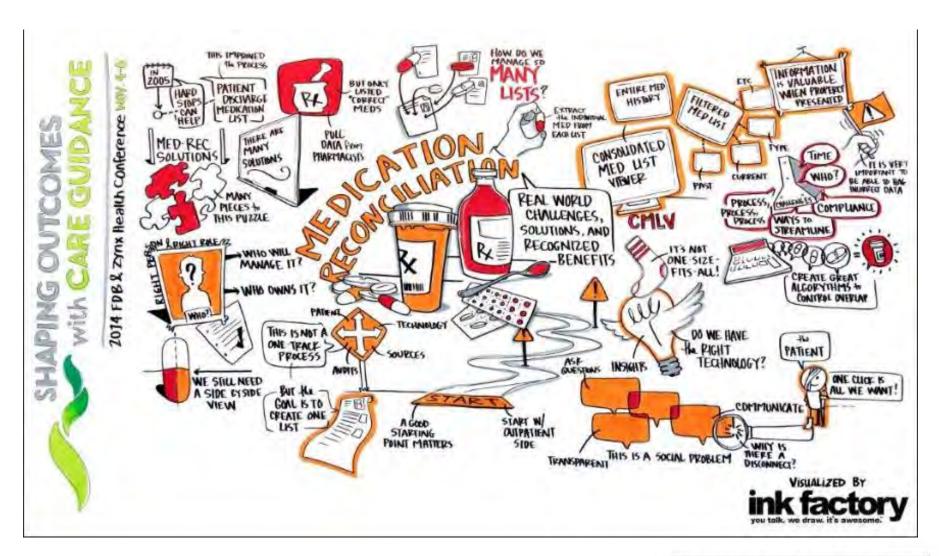
#### Medication Reconciliation

#### CMS definition:

"The process of identifying the most accurate list of all medications that the patient is taking, including name, dosage, frequency, and route, by comparing the medical record to an external list of medications obtained from a patient, hospital, or other provider."



#### Medication Reconciliation Challenges





#### Case #1

- A 73 year old female admitted for chest pain currently taking 21 prescription medications
- Upon admission documentation in HPI stated:
  - "She is unable to recall her home medication at this time...
    We do not know exactly what medication she is on at the current time."
- Home medications were then loaded from a previous hospital admission resulting in omissions, additions and incorrect doses......

#### **Omissions**

- Medications:
  - Metformin (Glucophage®) Diabetes
  - KCI Potassium supplementation
  - Spiriva® Inhaler for COPD
  - Montelukast (Singulair®) COPD
  - Lorazepam (Ativan®) Anxiety



#### Additions

- Medications:
  - Ziprasidone (Geodon®) Atypical antipsychotic
  - Carbidopa/Levodopa (Sinemet®) Parkinson's Disease
  - Metoprolol Tartrate (Lopressor®) Hypertension/Heart Failure
  - Alprazolam (Xanax®) Anxiety



#### Incorrect Dose

- Dosage Discrepancy:
  - Sertraline (Zoloft®) 200 mg/day instead of 150 mg/day
  - Furosemide (Lasix®) 40 mg/day instead of 20 mg/day



#### The Results....

- Omitted medications were NOT given during the hospitalization.
- Omitted medications were NOT listed on discharge medication list
- Added medications were administered throughout hospital stay
- Added medications were listed on discharge medication list
  - Ziprasidone and carbidopa/levodopa filled after discharge
  - Blood pressure immediately prior to discharge was 102/55 mm/Hg
- Incorrect doses were administered throughout hospital stay
- Incorrect doses listed on the discharge medication list



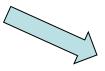
#### Case #2

An 85 year old man with atrial fibrillation who takes warfarin for stroke prophylaxis was hospitalized for pneumonia. His dose of warfarin was adjusted during the hospital stay and was not reduced to his usual dose prior to discharge. The new dose turned out to be double his usual dose, and within two days he was re-hospitalized with uncontrolled bleeding.



#### Effective Medication Reconciliation





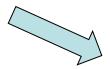
#### **Best Possible Medication Hx**

- 1. Patient/Family Interview
- 2. Medication Vials/List
- Medication Databases
- 4. Previous Patient Health Records



#### **Best Possible Discharge Plan**

- Reconciled Discharge Prescriptions
- 2. Physician Discharge Summary
- 3. Patient Medication
  Discharge Summary







# Interprofessional Geriatric Transitions of Care and Discharge Planning Toolkit

Section	Page <u>5</u>
I. Models of Transitions of Care and Discharge Planning	
II. Assessment Tools	14
III. Additional Resources	<u>19</u>
IV. Population Specific Resources	21
V. Consumers & Caregivers	24
VI. Advance Directives	26
VII. Clinical Services	27
VIII. Hospice	28
IX. State Agencies and Networks	29
X. Entitlements/Public Benefits Programs	30
XI. Training and Education	31



#### **GEDI WISE**

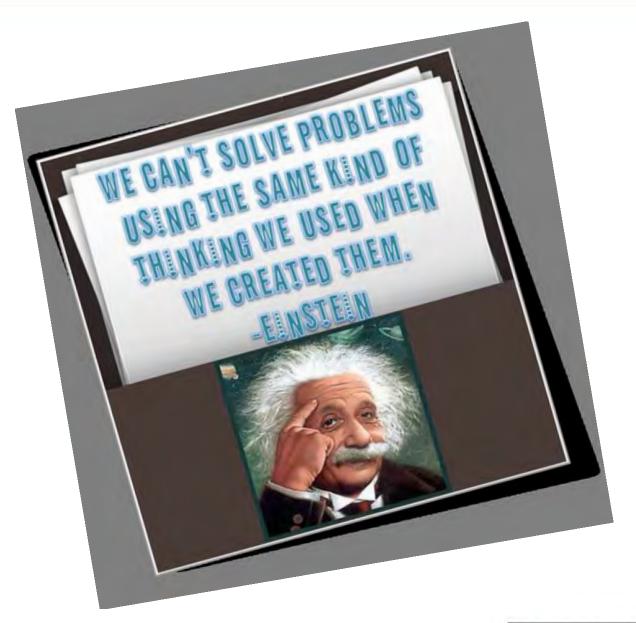
- "Geriatric Emergency Department Innovations in Care through Workforce, Informatics, and Structural Enhancements" (GEDI WISE) program
  - Three Hospitals
    - Mount Sinai Medical Center
    - Northwestern Memorial Hospital
    - St Joseph's Regional Medical Center
  - Dedicated ED space
  - Targeted goals of improving screening and care coordination for patients >65
  - Multidisciplinary team
    - EM/geriatrician
    - Geriatric trained nurses and nurse practitioners
    - Social work
    - Pharmacist
    - Physical therapist



#### Resources

- National Committee for Quality Assurance
  - www.ncqa.org
- National Transitions of Care Coalition
  - www.ntocc.org
- Center for Medicare and Medicaid Services
  - <u>www.cms.gov</u>
- Partnership for Patients
  - www.healthcare.gov
- Transitional Care Model
  - www.transitionalcare.info
- The Care Transitions Program
  - www.caretransitions.org









## BREAK





# Surgical Treatments for Obstructive Sleep Apnea & Snoring

Jeffrey M. Phillips, MD, D, ABSM, FACS

Otolaryngology, Sleep Medicine & Surgery Accent Physician Specialists.

### Speaker Disclosure

+ No relevant financial relationships to disclose.

+ Any medical device or surgical product mentioned is for educational purposes only.

## Brief Outline-What's on Tap?

- (1) Overview of Sleep Apnea
  - + Causes? Why treat?
- (2) Treatment Options & Evaluation
- (3) Surgical Therapies for Sleep Apnea
  - + Nasal, Palatal, Tongue Base, Skeletal
- (4) Newest Therapy for OSA: Inspire
- (5) **Questions**

## Snoring & Sleep Apnea



#### + Sleep Apnea

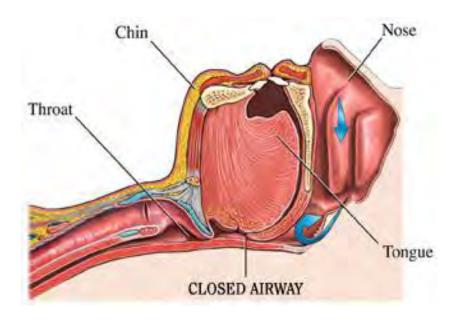
- + Affects over 100 million people worldwide
- + 75-80% do not seek medical care
- + Up to 10% of adults have defined OSA
- + Up to 20% of adults diagnosed with OSA in their lifetime

#### + Snoring

- + Nearly 70% of adults experience snoring
- + Up to 40% of snorers  $\rightarrow$  OSA

### Etiology of OSA

- (1) Narrow Upper Airway Anatomy & Obstruction
  - -- Nose & Nasopharyx >> septum, turbinates, adenoids
  - -- Oropharyx & Soft Palate > palate, uvula, tongue
  - -- <u>Hypopharyx</u> → BOT, laryngeal walls, epiglottis





- -- Craniofacial structur
- -- Genetics

-- Obesity



### Etiology of OSA

#### (2) <u>Airway Muscle Compensation Decreased → Collapse</u>

- -- Negative intrathoracic pressures: \( \) airway patency
- -- Dilating forces of palatal, pharyngeal & tongue muscles:
  - ↑ airway patency
    - + Failed reflex activation of dilators
    - + genioglossus m, palatopharyngeus m.
    - + levator veli palatini m.

### Why Do We Treat OSA?



#### **→**Snoring

+ Separates bed partner, embarrassment

### → Sleepiness & Impaired Functioning

- + Driving Accidents
- + Quality of Life > Impact on overall health
- + Reduced Productivity at work/home
- + Behavioral & Mood

### Why Do We Treat OSA?



- Cardiovascular & Metabolic Risks
  - + Hypertension
  - + Stroke
  - + Coronary Artery Disease & Myocardial Infarction
  - + Diabetes (weight & insulin resistance)
  - + Congestive Heart Failure
  - + Pulmonary Hypertension

# Treating Sleep Apnea

#### + EVALUATION

- (1) Snoring? Poor Sleep? Daytime Sleepiness?
  - + Establish the Right Diagnosis
- (2) <u>Exam</u>
  - + Identify areas of obstruction
  - + Clinical & Endoscopic (Sleep)
- (3) Treat Underlying Medical Issues
  - + Nasal obstruction + Allergies
  - + Obesity + Alcohol
  - + GERD + Sleep Hygiene

# Treating Sleep Apnea

#### + TREATMENT APPROACH

#### Consider....

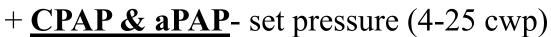
- Benefits vs. Harms
- Efficacy of Treatment
- Patient's needs/goals -
- Likelihood of Use (Devices)
- Disease Severity

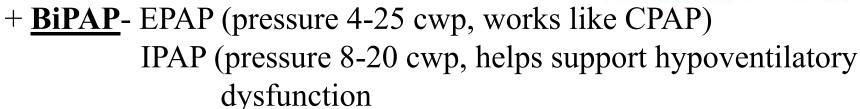
(1) Treat underlying issues (2) Conservative measures (3) Drugs (4) Devices (CPAP, OA) (5) Surgery



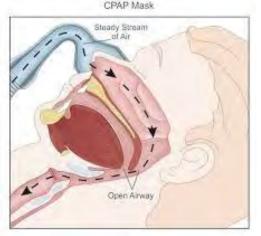
#### **Nasal CPAP**

- + Still considered first-line therapy by most
- + Most studied
- + Best in Moderate→Severe OSA





- + **Problems**: (1) Nasal obstruction
  - (2) Wrong mask
  - (3) Wrong pressure
- (4) Insomnia/poor sleep
- (5) Claustrophobia

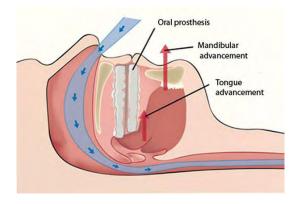


#### **Oral Appliances**

- + Advance mandible, pull tongue base & palate forward
- + Best in Snoring, Mild to Moderate OSA







Somnoguard (Sleep Appliance)

TAP-3 (Airway Management)

tmjtreatment.com.au

- + **Problems**: (1) TMJ issues & pain (4) Moving teeth
  - (2) Change in occlusion (5) Nasal obstruction
  - (3) Oral sores



#### **Hybrid Devices**

+ Combine Oral Devices and Pressure Therapies





Winx<sup>TM</sup> System (ApniCure, Inc)



O<sub>2</sub> Vent Device (Oventus Medical, Inc)

#### **Not Quite Yet Available...**





Airing<sup>TM</sup> (Airring, Inc)

# Surgical Treatment of Sleep Apnea

#### + SHARED/PATIENT GOALS of TREATMENT

- + <u>Snoring</u>: Improve or resolve
- + Improve Sleepiness & Quality of Life
- + More restful sleep
- + "Throw away the CPAP"
- + Reduce medical risk (cardiac, HTN, CVA)
- + <u>AHI</u> < 20? 10? 5?

# Surgical Treatment of Sleep Apnea

#### + CLINICAL GOALS of TREATMENT

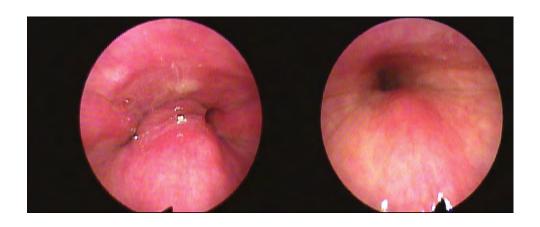
- Curative > Completely resolve OSA
  - + Maxillomandibular advancement (MMA)
  - + Various surgeries -> in select patients
  - + Aggressive procedures -> Tracheostomy
- Adjunctive Along with CPAP or Devices
- Salvage > Cannot tolerate/failed other therapies (CPAP)
  - + Major reduction in AHI, but often not cure



### Visual Assessment of the Upper Airway

#### **Diagnostic Sleep Endoscopy (DISE)**

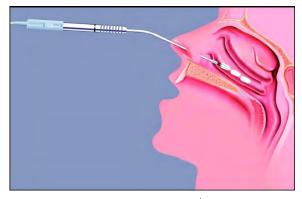
- + Light sedation with flexible endoscopy to identify sites of collapsibility
- + Propofol 2mg, then 50mcg/kg until Ramsey stage 3-4
- + Dynamics of airway during sleep





### Nasal Surgery

- + Nasal procedures for snoring & OSA
  - (1) Septoplasty
  - (2) Nasal valve reconstruction
  - (3) Turbinate reduction (RF, microdebrider, coblator)



www.entsurgery.com.sg

- + <u>Rationale</u>: ↑ Nasal resistance → ↑ Pharynx collapse
- + May improve snoring in many cases
  - -- Improved sleep, nasal breathing
  - -- Improves success with Nasal CPAP & oral appliances

### Office-Based Palatal Procedures

- + For Snoring, Very mild apnea
  - (1) Radiofrequency ablation (somnoplasty)
  - (2) Pillar Implants
  - (3) Snoreplasty
  - (4) Anterior palatoplasty

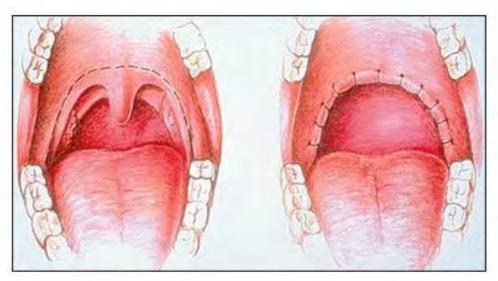






# Palatal & Pharyngeal Surgery

- + Standard Uvulopalatopharyngoplasty (UPPP)
  - + Tonsillectomy
  - + "Squared Incision"
  - + Anterior-Posterior pillars sutured



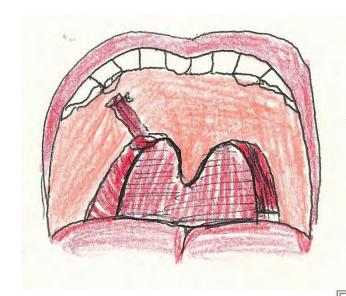


Dentalsleepmed.org.uk

# Palatal & Pharyngeal Surgery

- + Expansion Pharyngoplasty
  - Palatopharyngeus muscle rotation
  - Superior tonsillar space
  - Less tissue removal, more reconstructive

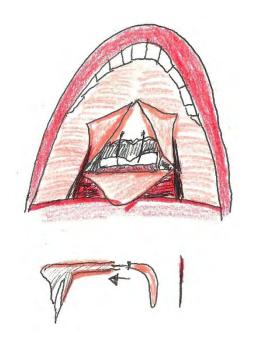




# Palatal & Pharyngeal Surgery

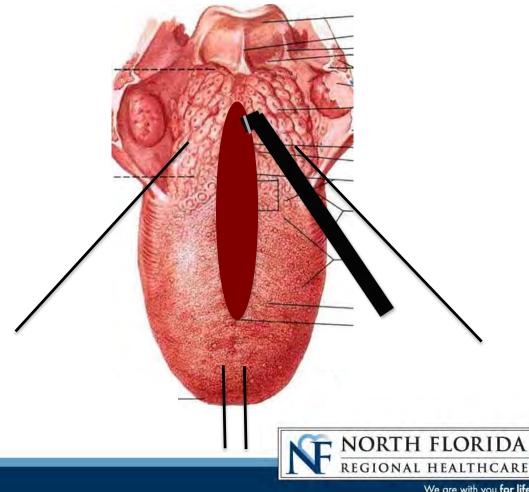
- + <u>Transpalatal Advancement Pharyngoplasty</u>
  - Advancement of soft palate anteriorly
  - Removal of 1cm of posterior hard palate





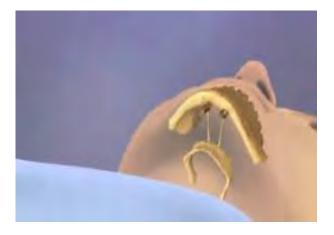
# Tongue Base Surgery

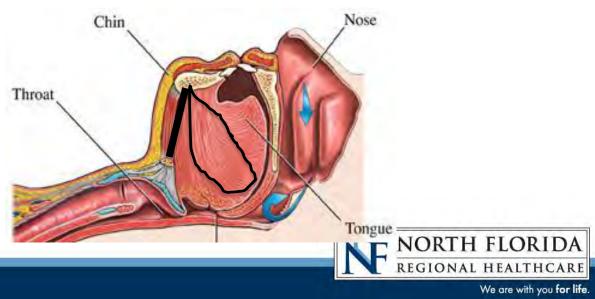
- + Glossectomy & Lingual Tonsillectomy (Tissue Removal)
  - -- Radiofrequency
  - -- Coblation®
  - -- Laser
  - -- TORS (Robot)



# Tongue Base Surgery

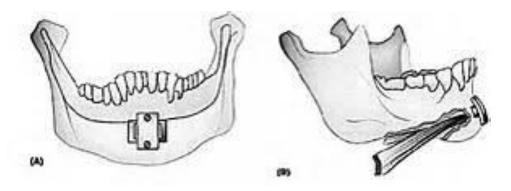
- + Hyomandibular Suspension & Tongue Base Suture
  - + Advances hyoid anteriorly toward mandible
  - + Pulls tongue base forward
  - + External incisions

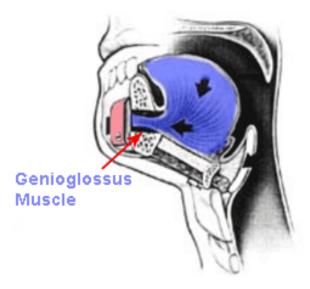




# Tongue Base Surgery

- + Genioglossus Advancement
  - + Advances tongue base
  - + Pulls genioglossus forward
  - + "Static" procedure





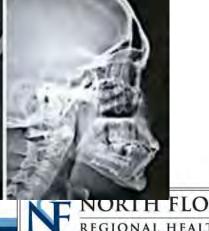
### Skeletal Advancements

#### + Maxillomandibular Advancement

- + Mandibular Advancement
- + Craniofacial Abnormalities
- + Often require orthodontics
- + 60-80% success rate
- + Changes in facial structure



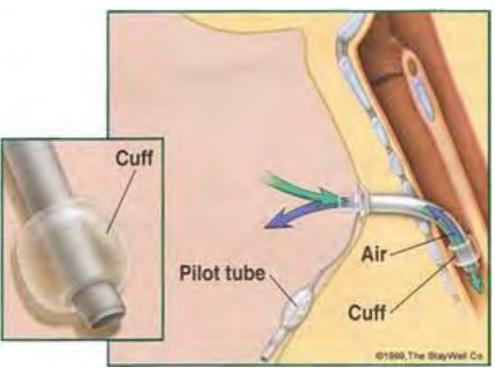




### Tracheostomy

+ Failed other therapies

+ Severe OSA with critical comorbid illness



# New OSA Therapies



- **→ CPAP Compliance & Adherence is Poor** 
  - + 50% of CPAP/BiPAP users end up not using CPAP
  - + Of those remaining: 50% will use it appropriately
  - + Only ~20% of patients achieve 75% reduction in

#### AHI

- + "Benefit" of therapy is only a part of the solution
- + <u>Adherence</u> to therapy → <u>Patient Satisfaction</u>

Grote L, et al, Eur Resp J. 2000, 16:921-7



# New OSA Therapies

Maxillomandibular Advancement

Benefit

High Benefit Low Harm High Benent High Harm

Low Benefit Low Harm Low Benefit High Harm Palatal Surgery

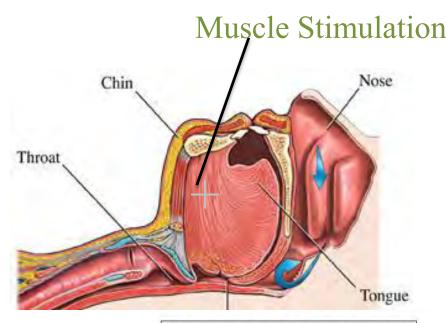
Oral Appliances

Harm



# Upper Airway Stimulation

- + Focus on Physiology of Sleep Apnea
  - Promote Upper Airway Muscle compensation
  - ❖ Neuromuscular tone → keeps the airway open when awake
  - **❖** Genioglossus m.
  - Other Key Factors
    - -- Sleep/Wake
    - -- Negative Pressure Reflex
    - -- CO<sub>2</sub> mediated respiratory drive

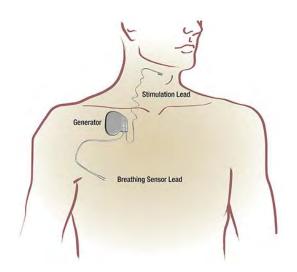




#### + FDA Approved, Fully Implanted

- -- Senses breathing pattern
- -- Gentle stimulation to medial branches of <u>hypoglossal nerve</u>
- -- <u>Stimulate</u> key protrusor muscles
- -- Patient controlled, remote

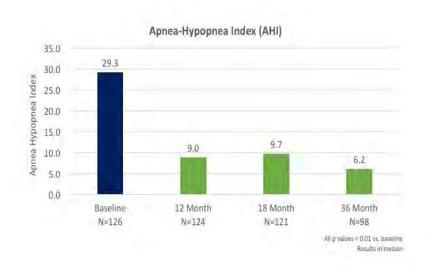


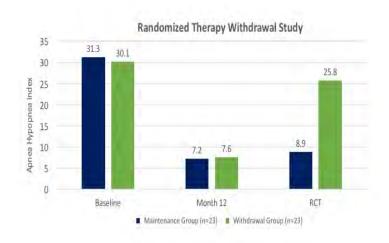




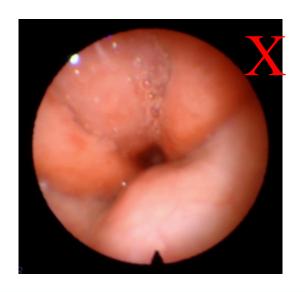
REGIONAL HEALTHCARE

- + STAR Trial: Strollo, et al. NEJM 2014 → 126 patients
  - -- 78% reduction in Apnea-Hypopnea events from baseline
  - -- 80% bed partners reported soft to no snoring (17% baseline)
  - -- Significant improvement in QOL (Epworth & FOSQ)
  - -- Therapy withdrawl study, Woodson, et al., OTOHNS 2014





- + <u>Upper Airway Stimulation Patient Population</u>
  - -- Moderate to Severe OSA→ AHI 20 to 65
  - -- BMI  $\leq$  32, Over age 22
  - -- Intolerant or Unable to Consistently Use CPAP therapy
  - -- Favorable Anatomy on Sleep Endoscopy (DISE)
    - No complete concentric collapse at palate





#### + Outpatient procedure

- -- 3 Incisions
- -- Often Tylenol or NSAIDs only for pain
- -- Post-op at 1 week: Incision check, remove any sutures
- -- Device activated at 1 month
- -- Therapy optimized (titrated) in Sleep Lab

#### + Adverse events

- -- Minimal (bleeding, pain, tongue weakness/swelling)
- -- Mouth discomfort (sharp teeth), dry mouth, insomnia
- -- Not currently MRI compatible
- -- Therapy is not for everyone!







### Questions

### Jeffrey M. Phillips, MD, D, ABSM, FACS

Otolaryngology, Sleep Medicine & Surgery Accent Physician Specialists.

# Hyperbaric Medicine, Goldilocks, and Wound Therapy

Matthew S. Ellis, M.D.

Medical Director

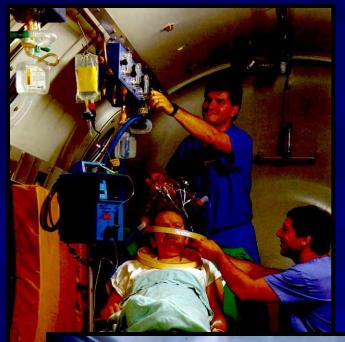
Hyperbaric Services

North Florida Regional Medical Center





### **Multiplace Chambers**









### **NOT Hyperbaric Oxygen:**

Topical Oxygen "TopOx"







Uses very low pressures(<1.1 ATA)
Little oxygen is absorbed into the wound or through skin.

\*\* Not Approved by Medicare \*\*

# Definition of Hyperbaric Oxygen

- ■Breathing 100% O₂ at pressure of greater than one atmosphere absolute (1 ATA)
  - ■Intermittent and systemic delivery of O<sub>2</sub>
- ■Usually delivered at between 2 ATA (200% O<sub>2</sub>) and 3 ATA (300% O<sub>2</sub>)

# Mechanisms of Hyperbaric Oxygen Therapy

Hyperoxygenation

**Angiogenesis** 

Vasoconstriction

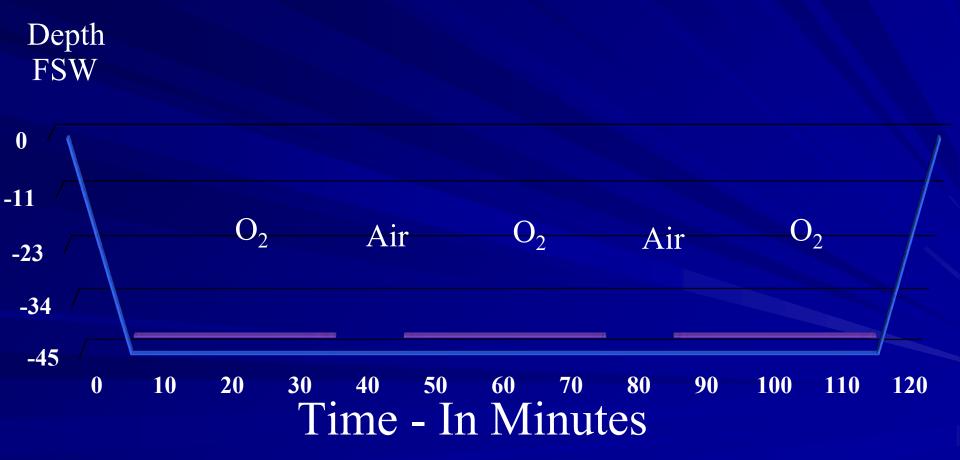
**Antimicrobial Activity** 

# Angiogenesis

■Adequate oxygen tension(>30mmHg) is a prerequisite for the new formation of collagen matrix by fibroblasts stimulated by macrophage release of lactate

- ■The collagen matrix provides a framework on which angiogenesis can take place
  - Production of VEGF ( a blood vessel stimulating factor) is enhanced

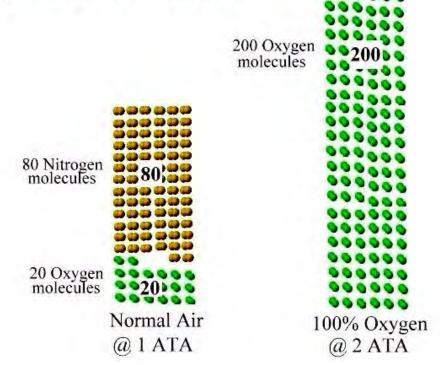
## Hyperbaric Chamber Profile



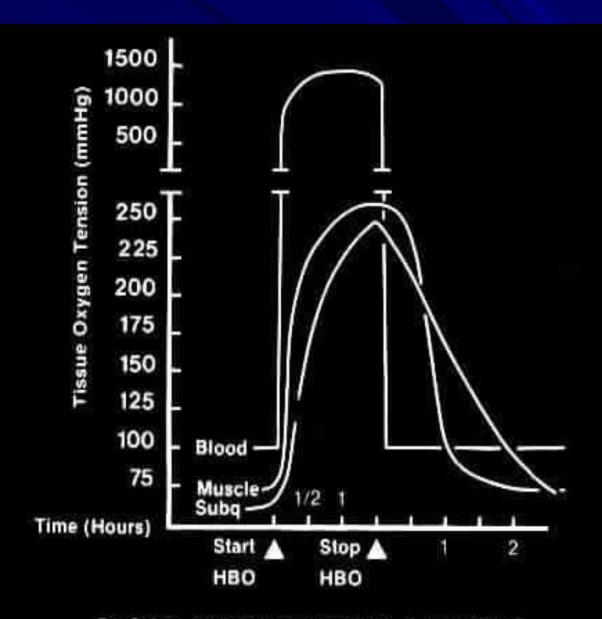
#### Oxygen Dose with HBO Therapy

HBO therapy provides 10 to 15 times the normal dose of oxygen that you breathe at sea level on normal air (1 ATA).

By breathing 100% oxygen in the chamber under a pressure of 2 ATA, which is twice the normal surface pressure, it allows 10 times more oxygen in each breath that is dissolved in the blood and tissue.



## Hyperoxygenation



Oxygen
Levels in
Blood and
Tissue

BLOOD, SUBCUTANEOUS, & MUSCLE OXYGEN TENSIONS WITH HBO

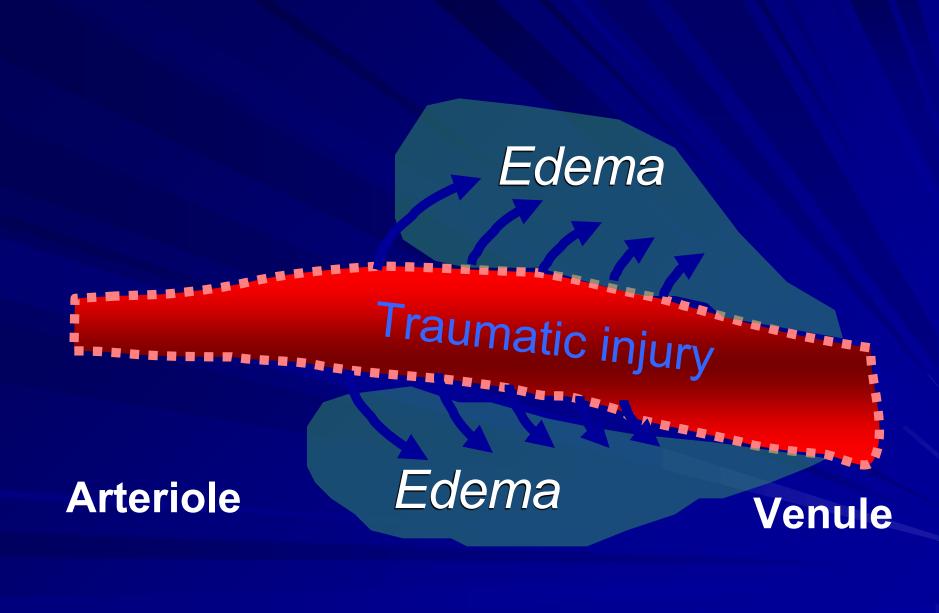
## **Vasoconstriction**

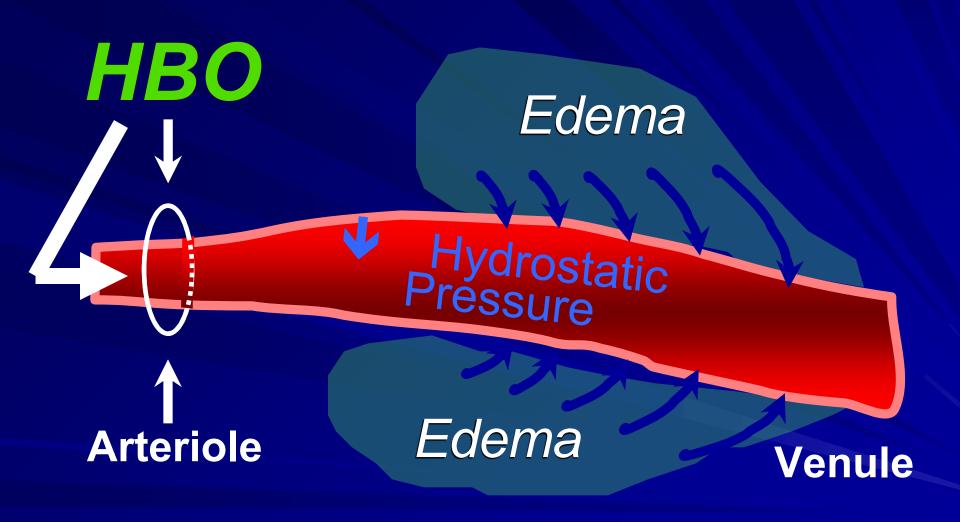
■Helpful in managing intermediate compartment syndrome and other acute ischemias

- Reduces interstitial edema in compromised tissue; grafts and flaps

- Decreases need for IV fluid hydration in management of burn patients

wound





### Vasoconstriction

**■Net result** 

-Decrease in tissue edema

-Increase in tissue oxygenation

# **Antimicrobial Activity**

- ■There is a direct bacterio-static effect from HBO (particularly for anaerobes) due to elevated oxygen levels
  - ■Enhances the action of some antibiotics

■Neutrophils require oxygen for microbial killing via phagocytosis and intracellular free radical production (requiring 10-15 fold oxygen consumption over normal conditions)

## Role in Infectious Disease

Clinical Applications

Clostridial *perfringens* infections ("gas gangrene"), in which HBO suppresses production of alpha toxin

Necrotizing soft tissue infections (necrotizing fasciitis, myonecrosis, and others)

# Indications Related to Wound Care

- Diabetic Ulcer of Lower Extremity
- ■Bone and Soft Tissue Radiation Necrosis
  - Compromised Skin Graft/Flap
  - Arterial Insufficiency leg ulcers
  - Chronic Refractory Osteomyelitis

Presently, Medicare approves 15 indications for HBO

### **Contraindications to HBO**

■ Absolute Contraindications
Untreated Pneumothorax

Relative Contraindications
Seizure Disorder (not under control)
Fever >100
Pregnancy
URI

Concurrent Doxorubicin, Adriamycin, Cisplatinum
Hypoglycemia
Concurrent Spinal Radiation
COPD (severe)

# **Side Effects and Complications**

- Oxygen Toxicity (Lung/CNS)
  - Hypoglycemia
    - Barotrauma
  - Myopia/Cataracts
  - Confinement Anxiety

# **Fire Safety**

Risk of Fire: Monoplace vs. Multiplace

■To Reduce Risk
100% Cotton
Electrical Ground

Pro Ir

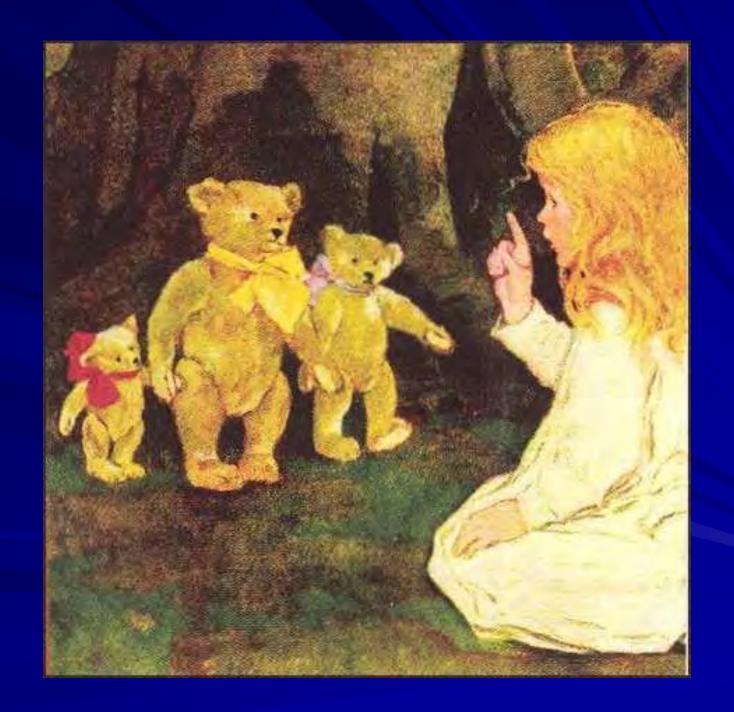






Goldilocks, R.N.

Certified Wound Specialist



### CHRONIC WOUNDS: A GLOBAL PROBLEM

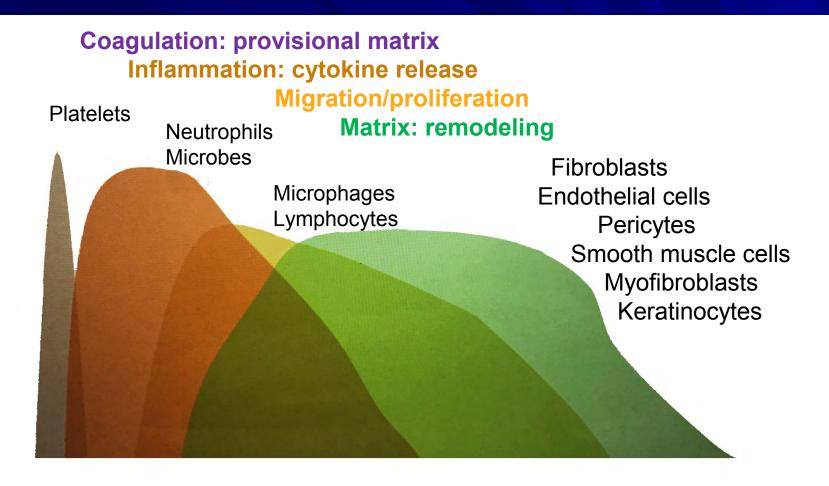
WOUND TYPE	PREVALENCE	EST. ANNUAL DIRECT COST (USD)
Venous	2.5 million	Many BILLIONS
Diabetic	882,000	>6 BILLION
Pressure	10% - 18% (acute care) Up to 28% (extended care)	Many Billions Doctor visits: \$520/pt Hospital: ~\$16,000/pt

Reduced Cost

Improved Population Health

Improved Patient Experience

# PHASES of WOUND REPAIR



#### **HEALING WOUNDS**

- Low Inflammatory cytokines
- Low Proteases, ROS
- Functional ECM & growth factors
- Mitotically competent cells
- Apoptic clearing (without necrosis

#### **CHRONIC WOUNDS**

- High inflammatory cytokines
- High proteases, ROS
- Degraded ECM & growth factors
- Quiescent and senescent cells
- Necrosis (without regulation of apoptosis

INFECTION 8 IMMUNITY

NECROSIS

PRESSURE

# CHRONIC WOUND CONUNDRUM

PERFUSION

**METABOLISM & NUTRITION** 

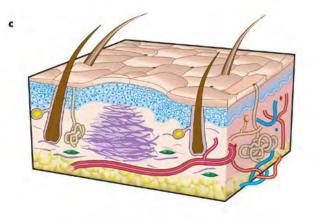






# Epidermis Bacteria Oxygen Fibrin clot Fibrin clot Subcutaneous layer Fibroblast Neutrophil Sebaceous gland Collagen Capillary

# New blood vessel Eschar Granulation tissue



# INFLAMMATION

**REPAIR** 

REMODELLING

# General Wound Types:

Arterial ulcers Venous ulcers Diabetic ulcers Decubitus ulcers Non-healing surgical Radiation related

# Dressing choices

The wound will dictate the treatment.

Too wet: absorb

Too dry: moisturize

Just right: maintain

# Dressings

- Gauze
- Transparent membrane
  - Foam
  - Hydrogel
  - Hydrocolloid
- Alginates (Silver vs plain)
- Collagen (Silver vs plain)
  - Debridement
  - Topical antibiotics



**Supplies** 



**More supplies** 

# Debridement

- Mechanical
  - ■Sharp
- ■Enzymatic
- Autolytic
- ■Animal (maggot)

# Why? Why? Why?

Why, how did the wound occur? Treatment depends on the cause.

■Must therefore consider:

Nutrition
Circulation
Sensation (or lack thereof)
Skin moisture
Pressure

# What to Watch For

As a wound progresses/regresses character of wound may change Moisture content may change Granulation tissue should evolve Wound margins may change

# Partnership

 Wound care involves education and forming a contract with the patient. Patients should be actively engaged in the regimen so they understand the what/why of wound care. Education should be provided so the patient can minimize chances of recurrence.



## Thank You!







# SURVEYS & CERTIFICATES



We are with you for life.

### THANK YOU

