Palpitations- a nuisance or a real concern?

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Agenda

1. Understand how prevalent palpitations are
2. Understand the physiology of ectopic beats
3. Understand the difference between most common types of ectopic beats
4. Learn what causes palpitations
5. Learn what resources UHC has to offer members

Disclosure

I have no actual or potential conflict of interest in relation to any product or service mentioned in this program or presentation.

Palpitations –What are they?

Palpitations ..What are they?

- cause is usually benign
- palpitations are occasionally a manifestation of a concerning or potentially life-threatening arrhythmia.
- subjective symptom, described as
  - as an unpleasant awareness
  - a forceful, rapid beats
  - irregular beating of the heart.
  - a rapid fluttering in the chest
  - flip-flopping in the chest
  - pounding sensation in the chest or neck.
- It’s a feeling that your heart is missing heartbeats

The patient's precise description of their sensations may help the clinician determine the cause of the palpitations

The prevalence of palpitations

- One study estimated that in a year, @ 6-11% of people report having experienced palpitations
- Another study found that 16% of people saw their PCP because of palpitations
- Most common in women and around hormonal changes (menstruation, Pregnancy, menopause)
- More common with age

CASE

54 yo woman with palpitations for 2 weeks

Physiology of palpitations:

Video of the heart conduction system – SA Node:- https://youtu.be/BMZm6MJ2GII

Video of the electrical system of the heart : - https://youtu.be/BTJosjBOkZg

3D anatomy of the heart ventricles :- https://youtu.be/yIK9gDjfEms

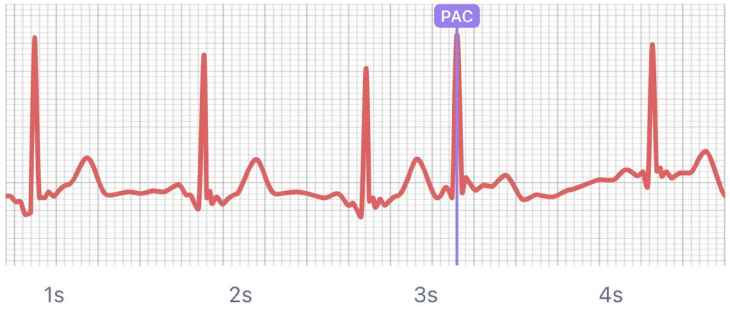
What is a palpitation (ectopic beat)?

- a type of abnormal heart rhythm or arrhythmia
- When an electrical signal fired from the wrong place at the wrong time, causing the heart to beat out of rhythm
- Many are unaware of extra beats or minor irregular beats
- Completely healthy people can have extra or skipped heart beats

- Ectopic heartbeats are characterized depending on the source of the electrical impulse:
  - **Premature Atrial Contraction (atrial)** - extra heartbeat originates in the atria — or top of the heart — in a location other than the SA node
  - **Premature Ventricular Contraction (ventricular)** - when an extra heartbeat originates in the ventricles, or bottom of the heart.
  - **Premature Junctional Contraction (junctional)** - when an extra heartbeat originates at the connection between the top of the heart (atrium) and the bottom (ventricle), @ the atrioventricular (AV) node/Bundle of HIS because the SA node is blocked or diseased. Disrupt the underlying rhythm.**

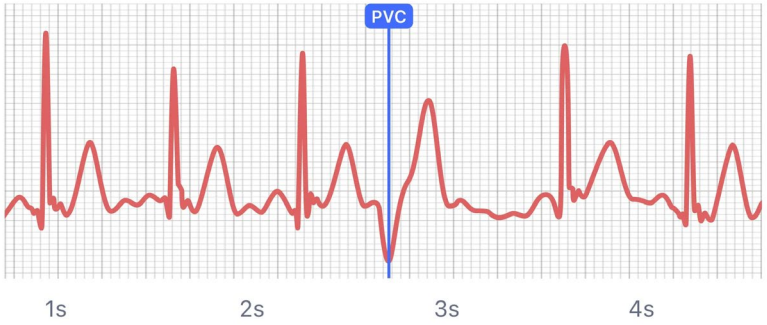
What is a palpitation (ectopic beat)? (Qaly)

- 1. PAC

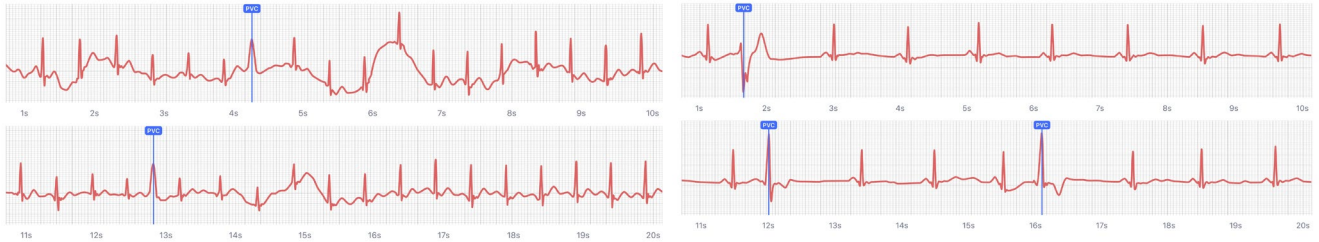


PAC -The hallmark of a PAC is a premature P wave observed before the next expected normal beat. This premature P wave usually has a different shape. a normal-looking QRS complex follows most PACs. Finally, PACs cause the natural pacemaker to "reset," which results in a longer interval before the next normal beat.

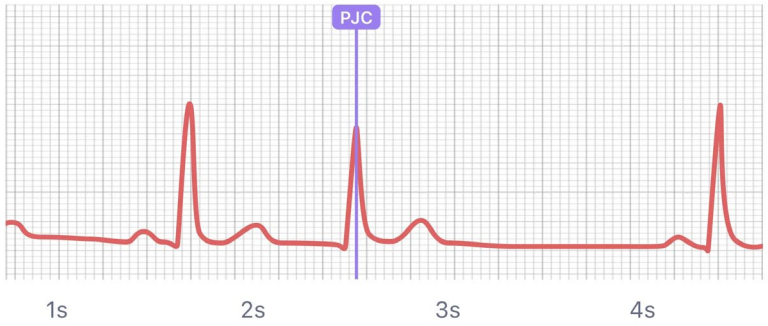
- 2. PVC



PVC- QRS complex of the PVC beat is typically wider than that of a normal beat. Also, PVCs interfere with the normal sinus rhythm by coming in before the next anticipated beat. Finally, you'll notice that there's no P wave before the QRS complex of a PVC beat. **Unifocal PVCs** look identical in appearance, and they originate from a single ectopic site.. **Multifocal PVCs**, on the other hand, arise from two or more ventricular sites. They also have different QRS shapes.



- 3. PJC



PJC-To identify a PJC, look for a premature QRS complex that shows up before the next expected normal beat. The P wave is either absent or upside down, and you'll usually see it after the beginning of the QRS complex. Additionally, the QRS complex will look similar in shape to that of a normal beat.

	AGE		DURATION		ABRUPTNESS – ONSET & RESOLUTION		RATE & RHYTHM	
	Young	Older	Short – lived	Sustained, minutes	Random , episodic	Gradual onset (many don't feel)	Rapid & regular	Irregular , rapid (fluttering)
PAC	SVT	PSVT, ST, PAF, AFlutter	Isolated PAC	SVT, PSVT	SVT * Can be self terminated by carotid massage/Vagal maneuvers		SVT, PSVT, ST, AVNRT* * Can be self terminated by carotid massage/vagal	PAfib, Aflutter, ST w variable block
PVC	Idiopathic VT , Torsades de Pointes d/t cong long QT syn	Vent Arrhythmia,	Isolated PVC	VT	VT		VT	sustained VT
PJC – less common (*most have heart failure /other heart condition)	Yg children or athletes with increased vagal tone	Adults w eg. SSS, Dix tox etc.	PJC, recurring	Possible 'run of PJC')	Sudden onset, lasts minutes to hrs, terminate abruptly			PJC – i

What causes palpitations?

Possible **Causes** of Heart Palpitations

Caffeine

Nicotine

Stress and anxiety

Dehydration

Panic or fear

Electrolyte or hormonal imbalances

Anemia

Causes of PJC

- Chest trauma
- Sick Sinus syndrome
- Radiation therapy
- Rheumatologic ds (Collagen vascular ds)
- Infectious ds (Lyme ds, Rheumatic fever,)
- Myocarditis, Pericarditis
- Medications (Clonidine, Reserpine, Adenosine, Cimetidine, Lithium, amitriptyline, Antiarrhythmic class I-IV, Beta blockers, CA Channel blockers, Digoxin**, Ivabradine, Opioids, Isoproterenol..)
- Cannabinoids
- Hypothyroidism
- Sleep apnea
- Hyperkalemia
- Amyloidosis
- Cardiac Ds (Ischemic Heart ds, Acute MI, Acute/Chronic CAD, Repair of Cong, heart ds, inherited channelopathy,)
- Genetic conditions (Neuromuscular ds, X-linked MD, Familial disorder)
- Carotid sinus hypersensitivity , Vasovagal stimulation (eg endotracheal suctioning)

Causes of PAC, PVCs

- Any of the causes listed above and..
- Decongestants
- Alcohol use(acute use, Chronic or withdrawal)
- Supplements (Bitter orange, Elderberry, Ephedra, Hawthorne, Guarana, Valerian, and many others)
- Marijuana, Amphetamines, Cocaine,
- Hypoglycemia

None of these ‘causes’ are exclusive to nor conclusive of only PAC, PVC or PJC

Risk factors

- Older age
- Past and current smoking
- Sedentary lifestyle
- Overweight
- Hypertension, heart disease, thyroid and comorbid conditions
- Genetic factors

CASE

54 yo woman with palpitations, fatigue, no chest pain for 2 weeks

HX:

- 1 yr hx of ER+ breast cancer on Tamoxifen 20mg/d
- Hypothyroidism on Methimazole 30mg/d, which she stopped
- HTN on Telmisartan 40mg/d
- Chronic Allergies occasionally takes OTC remedies

Social HX:

- Stressed , feels anxious often, denies depression
- Bank teller, sedentary job
- Stopped smoking 25yrs ago , consumes alcohol occasionally, no illicit drugs

PE:

- HR 118, BP129/78 hgt 5’6” wt 168# BMI 27.3 (nl 18.5-24.9)
- Lungs clear, no lymphedema,

LABS/EKG

-CBC; Lytes – no abnormality ; EKG – irregularly irregular

What in the history are you concerned about? What are the risk factors?
What would be your first suggestions?

How are palpitations evaluated?

What to consider when evaluating palpitations?

1. History
2. Duration of palpitations
3. Abruptness of onset and resolution
4. Heart rate and rhythm regularity
5. Additional sensations
6. Associated syncope or presyncope
7. Patient self-termination of palpitations
8. Effect of positional changes
9. Associated with exercise or emotional stress
9. Personal or family history of heart conditions
10. Coexisting medical conditions
11. Coexisting Psychiatric conditions
12. Medications prescribed
13. Non-prescription substances (over-the-counter medications, caffeine, Nicotine, Alcohol or others)

The key is to identify the heart rhythm at the same tine the patient experiences palpitations.

TESTS

- EKG (at the time of symptoms)
- Event Monitor (1-4 weeks testing period)
  - Continuous loop event recording
  - Implantable Continuous loop monitoring (ICM)
- Holter monitor (24-48hrs testing period)
- Smartwatches w EKG feature
- Single lead home EKG capture devices
- Echocardiogram (to ck heart size, function, Valve function) eg. MVP, HCOM

OTHER TESTS /Evaluation

- Labs –
  - electrolytes,
  - Thyroid,
  - hormone levels (inappropriate based on age etc)
  - drug test,
  - Prescription drug levels (eg Digoxin)
- Urine drug test
- Psychiatric evaluation if indicated

Suggested treatments or management?

Need to treat?

- STEP 1 – try to identify the source and eliminate all potential contributors
- STEP 2- testing
- STEP 3 – determine who to treat
  - Normal heart, Low burden of ectopy -> Treatment not required
  - Abnormal heart, low burden of ectopy -> treatment considered
  - Normal heart, high burden of ectopy -> Treatment considered
  - Abnormal heart, high burden of ectopy -> Treatment strongly recommended

	Low burden ectopy	High Burden ectopy (>10%)
Normal heart	No treatment	Treatment* considered
Abnormal heart	Treatment* considered	Treatment strongly recommended

Treatment

- **MEDICATIONS** (assuming they are not the cause)
  - Beta Blockers (B1&B2 – Timolol, Nadolol, Propranolol, Toprol, Atenolol; B1 selective – Bisoprolol, esmolol, metoprolol, Atenolol at low dose)
  - Calcium Blockers w Chronotropic features (Verapamil/verelan/Calan, Diltiazem/Cardizem/Tiazac)
  - Sodium Channel blockers (Antiarrhythmics eg, Amiodarone Procainamide, Flecainide, Mexiletine etc)
  - Potassium Channel blockers (Amiodarone, Sotalol etc)
  - Anticoagulation (w Afib, reduces est risk of stroke by 60-80% compared to placebo)

- **INTERVENTION**
  - Electrophysiology studies - reserved for patients whose ambulatory rhythm monitoring is unrevealing, especially those with sustained or poorly tolerated palpitations or a high pretest likelihood of a serious arrhythmia (eg, patients with structural heart disease)
  - Catheter Ablation – 1st line therpy if symptomatic HFrEF
  - Cardioversion
  - Psychiatric disorder treatment – prioritize if Dx is confirmed or refer to Behavioral medicine

CONSEQUENCES OF NOT TREATING ?

- PVC-Induced cardiomyopathy (enlarged floppy heart) and heart failure
- Syncope with or without secondary accidents/trauma (fracture hip, trauma to head etc)
- Increased risk of strokes - esp due to atrial arrhythmias
- Development of more serious arrhythmias (Atrial Fibrillation V.tach)

OR

- Hey how are you How was your day more challenging today than yesterday OK supposed to get started on this process but it messed up so I had to wait for them to fix them then and then I got to start tomorrow Oh OK I'm making lamb today yes
- ***Reassurance*** *if* benign nature – For patients whose palpitations are associated with a normal initial evaluation and documented sinus rhythm on ambulatory rhythm monitoring,

  - Suggest :-monitor their palpitations for an increase in frequency, severity, or development of any associated symptoms as these may be indications for repeat or further evaluation.

CASE

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What's different in this story? How does your suggestion change? Why?

When to call the Dr or 911

Consult the Dr or call 911 if your palpitations are:

- accompanied by chest pain, dizziness, shortness of breath or fainting
- persist for an extended period of time (more than a few minutes)
- worsening or occurring more frequently over time
- You are at high risk of developing heart disease
- You have an existing heart issue, including heart disease

(The Methodist Hospital – Houston)

Service coordinator or Nurse intervention?

Service coordinator/Nurse intervention

- 1. Brief history to determine acuity Review :
  - when sx started, duration of sx, duration of each episode,
  - **REDFLAGS** – syncope/presyncope, chest pains, dizziness/lightheadedness -> **send to ER**
- 2. Medication review –
  - any new meds, new supplements, OTC meds ; Review med necessity /need and pros/cons
  - Did they stop/start new or change a medication
- 3. Habits and /or Illicit drug use review –
  - Smoking – Nicotine/marijuana or other, cocaine etc - refer for Behavioral health intervention
- 4. Nutrition –
  - ask about fluid intake esp if on diuretics or on dialysis; consider AC functionality etc ; consider nutritionist – refer to cardiologist for fluid balance review
- 5. Hormonal status –
  - based on age, inquire about use (or not using) hormones; Premenopausal and menopausal women may consider hormone replacement if safe- refer to discuss w PCP/Gyn etc. Pregnant women – refer to discuss w Gyn ; Taking testosterone - refer to review w PCP

Service coordinator/Nurse intervention

- **MCO interventions & resources** that could help alleviate sx, reduce anxiety or conditions
  - Minor home modifications ,
  - Adaptive aids eg AC unit
  - Value-added services eg water bottle , journal
  - Contracted Vendor monitoring
  - Share information eg. Videos (Wolters Kluwer Health) on Palpitations
  - Make journal of actions/activities when palpitations occur
  - Check blood sugar/finger stick to exclude hypoglycemia
  - Check I-watches/devices for reports/recordings
- **Assistance with Urgent appointment** scheduling with INN Specialists & communication with PCP
- Consider **Behavioral health consult** -> presented as a tool to help control palpitations (ie anxiety)
  - Consider performing screening tools eg GAD-2, GAD-7, PHQ-9

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Q&A