

Tachyarrhythmias

1

ECG analysis

- Evaluate the ECG systematically. Do not guess the diagnosis!
 - Heart rate: Separately for P and QRS if rhythm is other than SR
 - Heart rhythm
 - Cardiac axis
 - Configuration and duration of P, QRS, T
 - Relationship of P wave to QRS complex
 - PR, QRS, QT duration

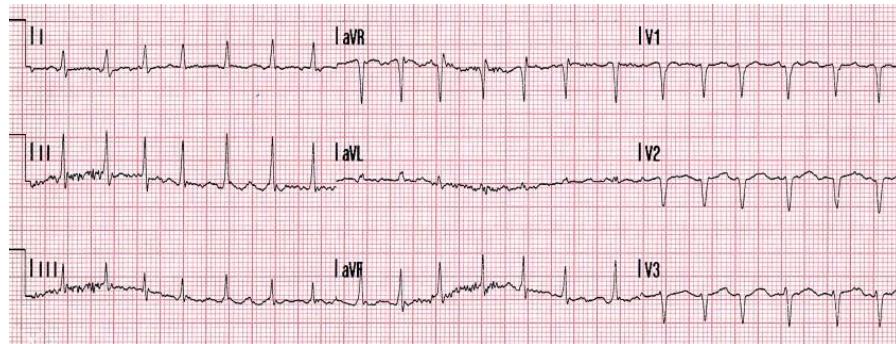
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Simple things first:
AF

Absent P waves
Fibrillation (f) waves present
Ventricular rhythm, in absence of 3rd degree
HB is irregularly irregular
Rate 100-180 bpm in absence of drugs
Rate > 200 bpm: Suspect WPW

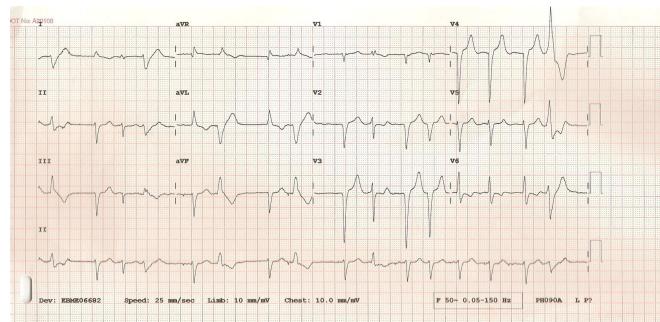
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AF



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Variation

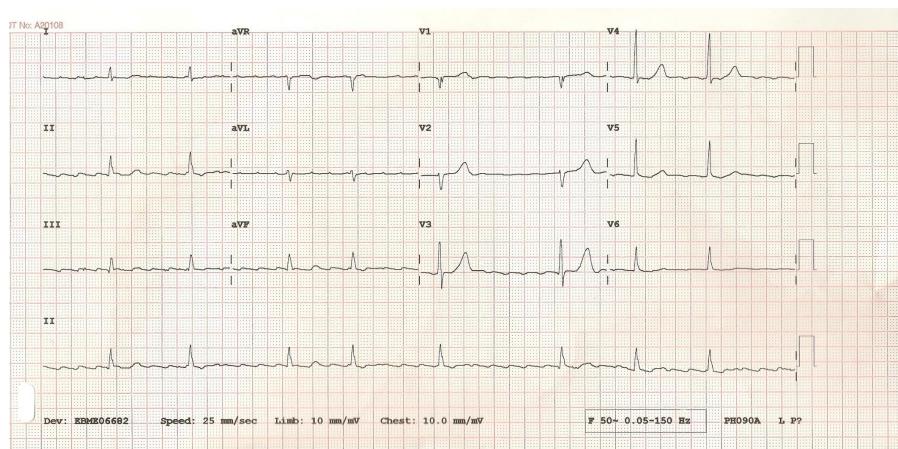
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Slightly more interesting: Atrial Flutter

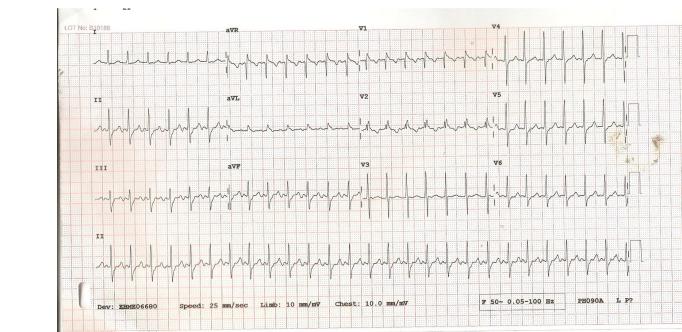
- Flutter waves (F waves); “saw-tooth” pattern
- Atrial rate 240-340 bpm
- Rate and regularity of QRS complexes are variable, depending on AV conduction. May have varying degrees of block (2:1, 3:1, 4:1 etc)
- In digoxin toxicity, CHB and junctional tachycardia

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Atrial Flutter, variable AV block



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Atrial flutter, 2:1 AV block

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SVT

- Includes AF and A.flutter, but conventionally used for the following group of arrhythmias:
 - Atrial tachycardia
 - AV re-entrant tachycardia (AVRT)
 - AV nodal re-entrant tachycardia (AVNRT)

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SVT

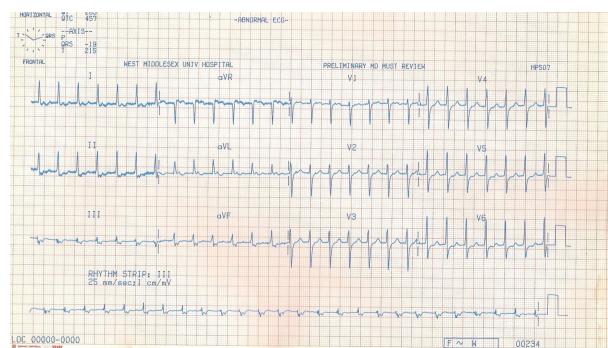
- Essentials:
 - Rhythm is regular
 - P wave not easily identified
 - QRS usually narrow
 - If rate is 150 bpm, rule out flutter 2:1

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SVT A bit more...

- If the QRS can be visualised, see if closer to preceding QRS (short R-P) or succeeding QRS
 - P-wave within or just after QRS: AVNRT
 - Short RP, but P waves 110 msec after QRS: AVRT
 - Long RP: AT

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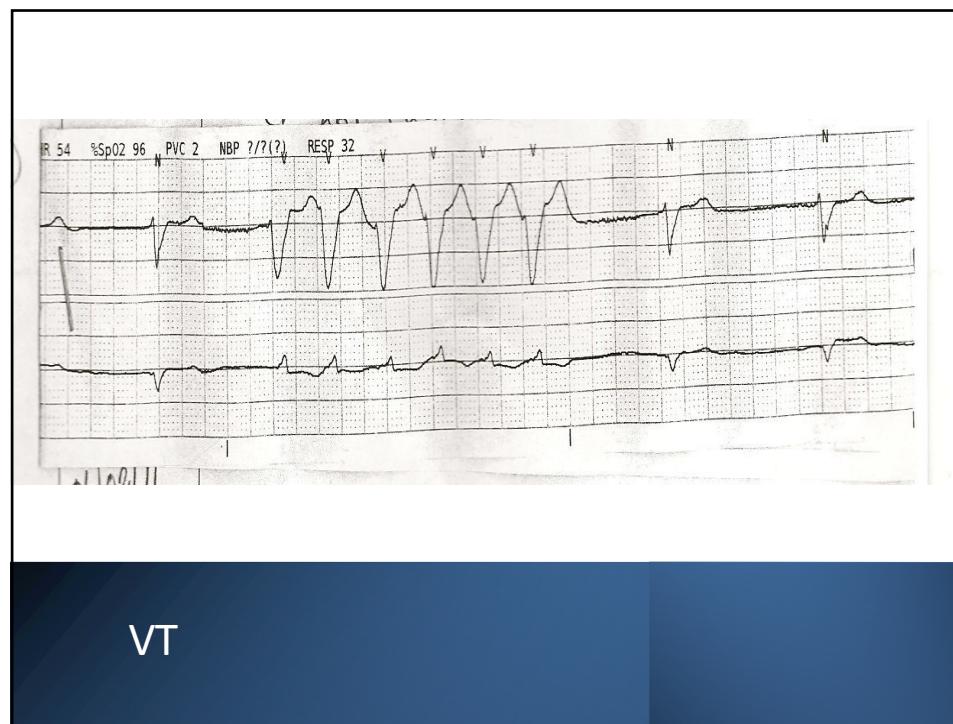


SVT

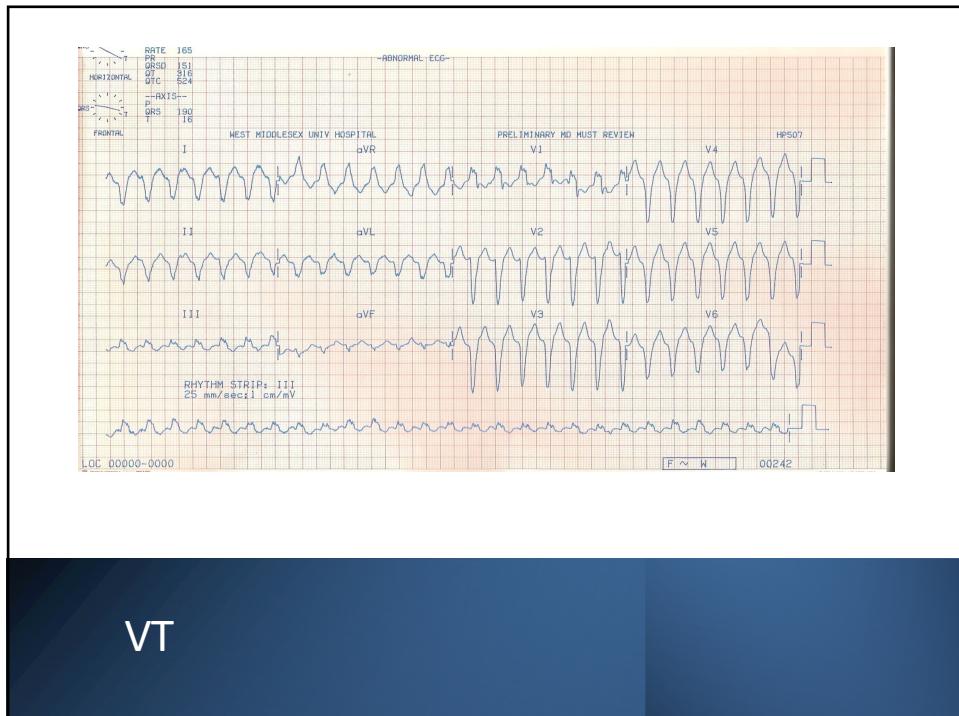
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- **% of all broad complex tachycardia is VT**
- **If broad complex tachycardia, assume VT until otherwise proven**

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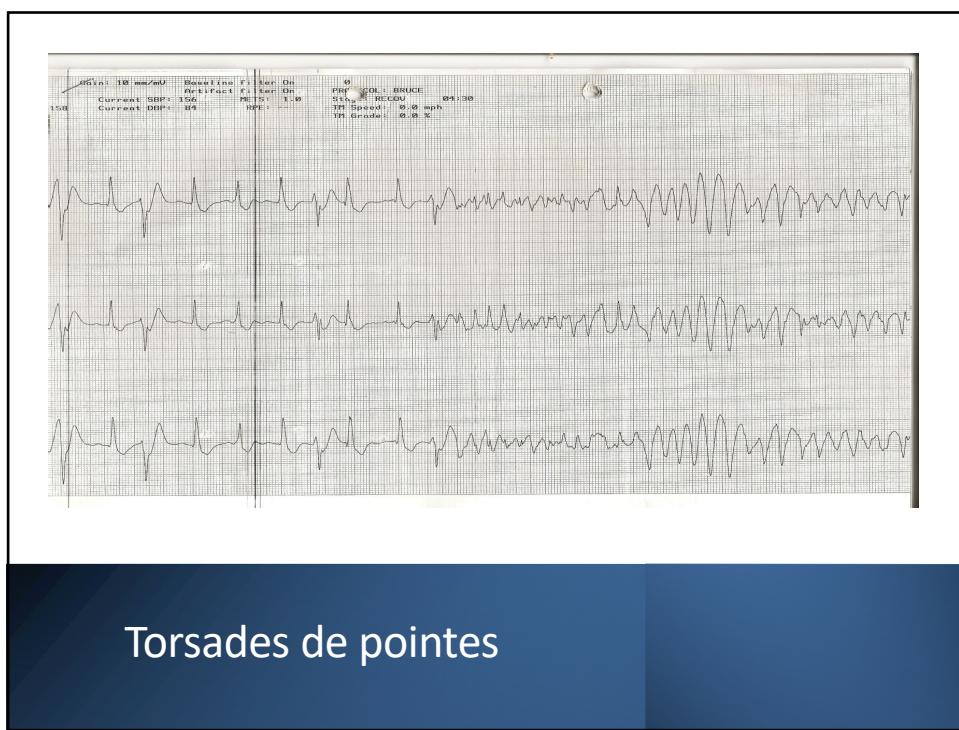


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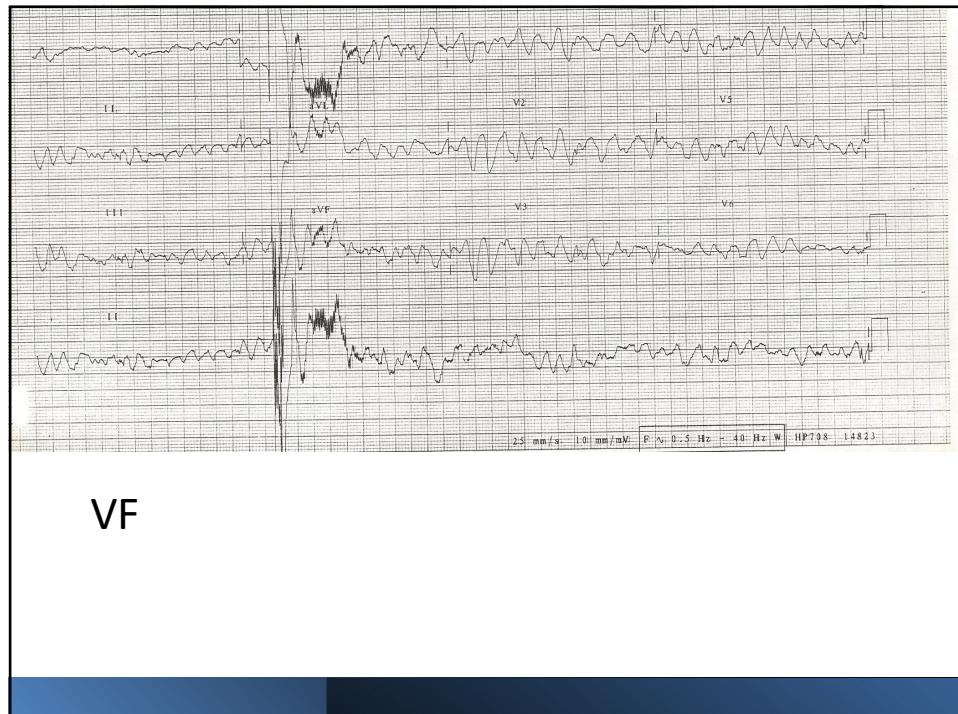
VT

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Torsades de pointes

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Wellen's criteria Morphologic criteria favouring VT (1)

- RBBB-like QRS:
- Monophasic R, QR, or RS in V1
- R/S ratio less than 1.0, QS or QR in V6
- * triphasic QRS in V1 or V6 supports SVT with aberrant conduction
- LBBB-like QRS:
- R > 30 msec, >60 msec to nadir S, or notched S in V1 or V2
- QR or QS in V6

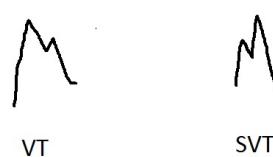
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Wellen's criteria Morphologic criteria favouring VT (2)

- Using V1(V2)-positive and V1-negative QRS morphology characteristics:
- V1(V2)-positive:
 - V1: mono- or biphasic QRS = VT
 - Rabbit ear sign with first peak > second (L > R) = VT
 - rSR' (triphasic) = SVT + RBBB
- V6: QS or deep S (R/S ratio < 1.0) = VT
- qRS (triphasic) with R/S ratio > 1.0 = SVT + RBBB

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Lead V1



Rabbit ear sign

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Wellen's criteria
Morphologic criteria favouring VT (3)

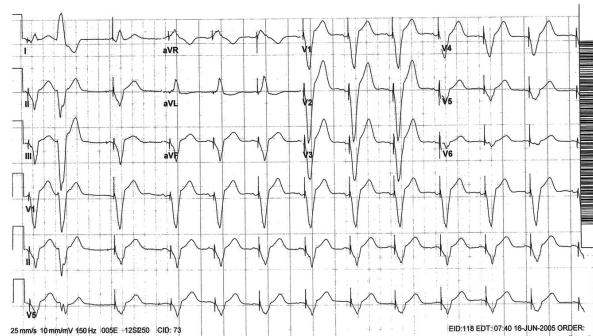
V1-negative:

V1,2: broad r > 0.04 sec and/or slurred or notched S resulting in prolonged interval from beginning QRS to S nadir = VT

*narrow r wave and quick S wave downstroke = SVT + LBBB

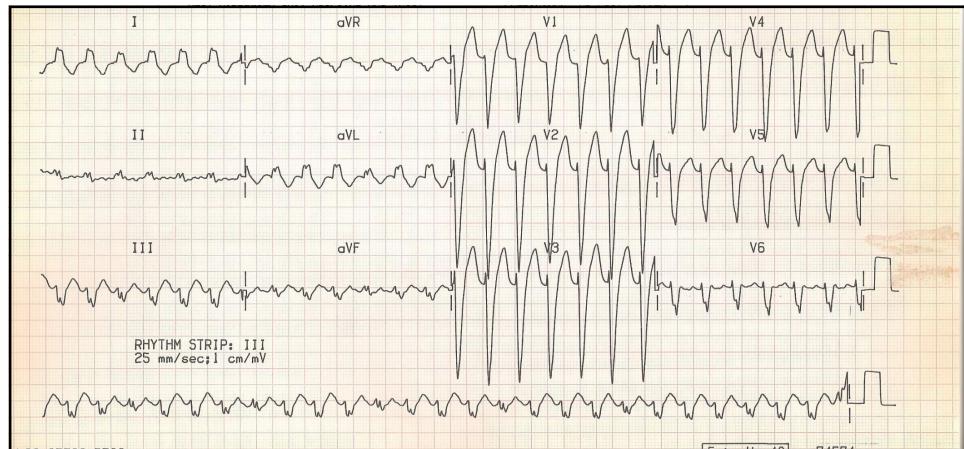
V6: any q wave = VT

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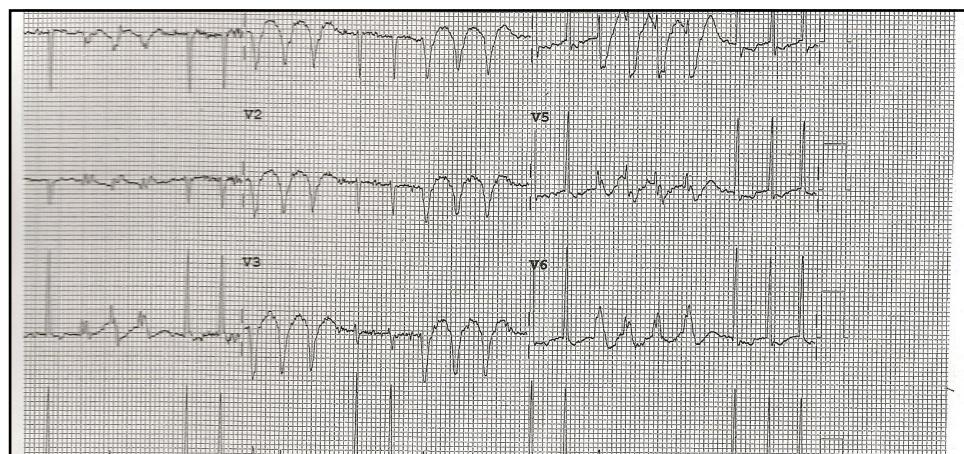
VT or not VT

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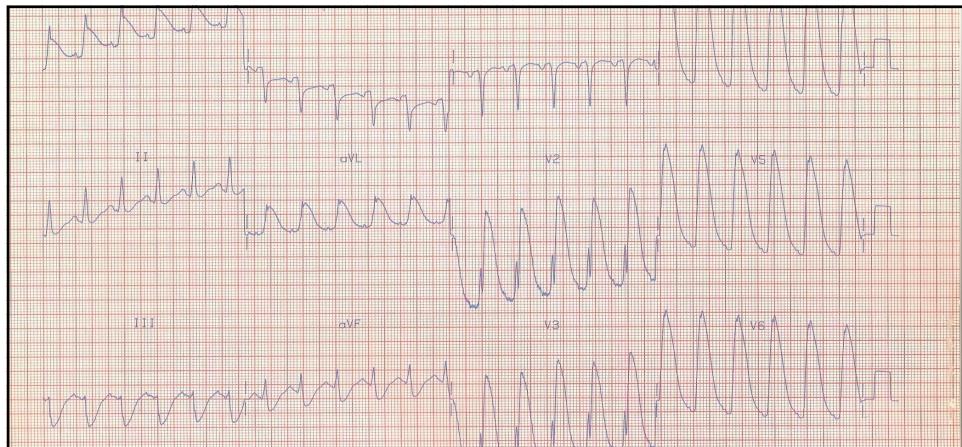
VT or not VT

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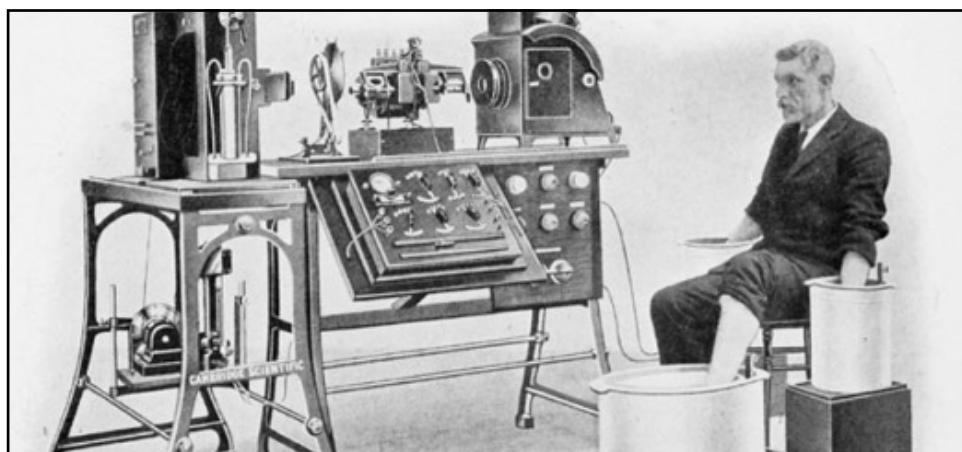
VT or not VT

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VT or not VT

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Thank you

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