GRADUATE ENTRY MEDICAL SCHOOL

Allergic Reaction/ Anaphylaxis

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By Davitt Ward

Objectives

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- Define an allergic/anaphylactic reaction
- List six signs and symptoms of an allergic reaction
- As a group classify the three types of reactions
- In groups, classify + treat allergic reaction patients

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Group Exercise

Definitions

***Allergic Reaction*:**

An allergic reaction is an abnormal immune response the body develops when the person is re-exposed to a substance or allergen.

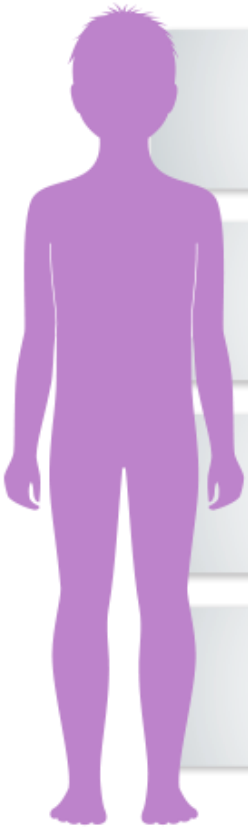
Definitions

***Anaphylaxis*:**

Is an acute, potentially life-threatening hypersensitive reaction.

Richard F. Lockey MD (2012). Anaphylaxis. [ONLINE] Available at: http://www.worldallergy.org/professional/allergic_diseases_center/anaphylaxis/anaphylaxissynopsis.php . [

Common Signs and Symptoms



EYES
Redness
Puffiness

NOSE AND MOUTH
Tongue swelling
Metallic taste in mouth

STOMACH
Feeling/being sick
Stomach cramps

SKIN
Flushing (redness)
Hives (itchy red spots)

HEAD
Sense of impending doom

HEART
Weakness
Fainting

LUNGS AND THROAT
Difficulty getting air in and out
Repeated coughing
Tight chest
Wheezing
Difficulty breathing
Swelling of the throat (itching of the throat, hoarseness, change in voice, choking)

http://www.haydns-wish.co.uk/what-is-anaphylaxis

Signs + Symptoms

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Mild

Urticaria and or angio oedema

Moderate

Mild symptoms + simple bronchospasm

Severe

Moderate symptoms + haemodynamically unstable and or respiratory compromise

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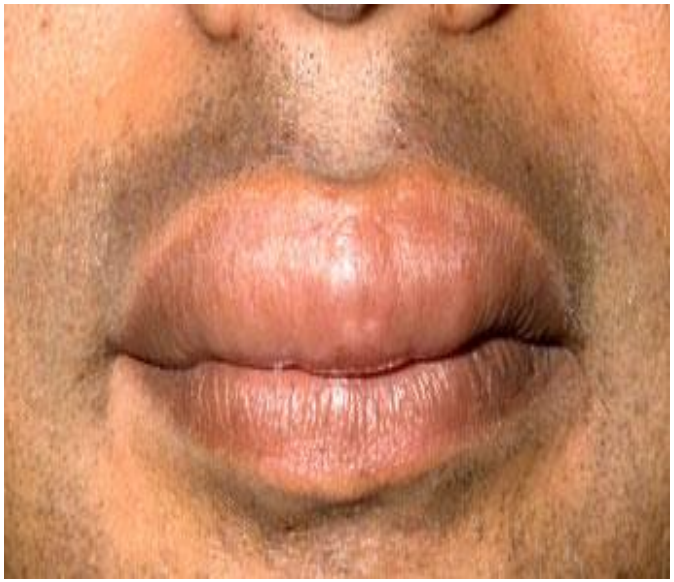
(April 2012). *PHECC Clinical Practice Guidelines - Paramedic*. 3rd ed.

Mild Reaction



wwww.angioeodemapictures.com

Moderate Reaction

Severe Reaction

Getty Images /empowher.com

Routes

- Absorption - Through the skin
- Inhalation - Respiratory tract
- Ingestion - Food

Common Triggers

Food

- Nuts
- Milk
- Eggs
- Wheat
- Shellfish
- Fish

Common Triggers

Stings

- Bees
- Wasps
- Ants
- Hornets

Common Triggers

Latex

- Latex Gloves
- Medical Equipment
- Condoms

Common Triggers

Drugs

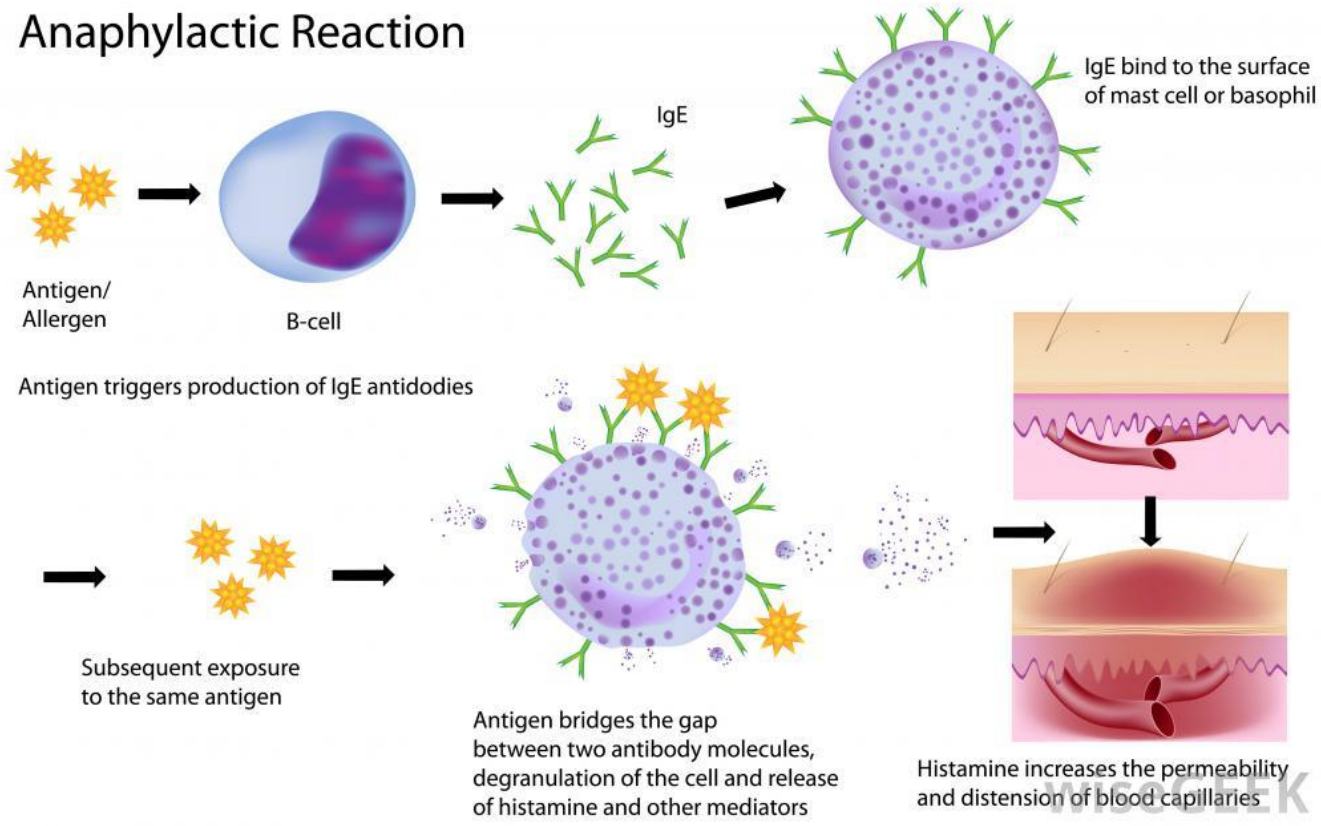
- Antibiotics
- Aspirin
- Non-Steroidal anti-inflammatory drugs
- Opioid analgesics

Common Triggers

Animals

- Dog hair
- Cat hair
- Horse hair

Pathophysiology



Treatment

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Mild Allergic Reaction Adult

- Airway - Clear
- Breathing - Normal
- Circulation – Normal
- Disability – Alert
- Expose and Examine – Urticaria and or angio oedema

Monitor reaction and transport

Treatment

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Moderate Allergic Reaction Adult

- Airway – Not compromised
- Breathing – If bronchospasm consider Salbutamol 5mg NEB
- Circulation – Increase HR and BP
- Disability – Alert
- Expose and Examine – Urticaria and or angio oedema

Monitor, O2, Possible Salbutamol be aware that this condition may deteriorate rapidly

Treatment

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Severe Anaphylactic Reaction Adult

- Airway – Maybe compromised
- Breathing – Expect compromised, SOB, bronchospasm / Airway occlusion
- Circulation – Compromised, hypotension, Tachycardia, haemodynamic status deteriorating
- Disability – Decreasing level of consciousness, impending doom
- Expose and Examine – Urticaria and or angio oedema

Use of 02, Salbutamol, Auto injector, Epinephrine 1:1000,

Sodium Chloride, and Hydrocortisone

Quiz

What are the signs and symptoms for a Mild allergic reaction ?

- Bronchospasm
- Hives and Swelling
- Wheezing

Incorrect

- Please try again

Correct

- Well done

Quiz

What are the signs and symptoms for a Moderate allergic reaction ?

- Angio Oedema
- Mild symptoms and Bronchospasm
- Urticaria

Incorrect

- Please try again

Correct

- Well done

Quiz

What are the signs and symptoms for a Severe allergic reaction ?

- Coughing and angio oedema
- Airway and or haemodynamic status deteriorating
- Bronchospasm

Incorrect

- Please try again

Correct

- Well done

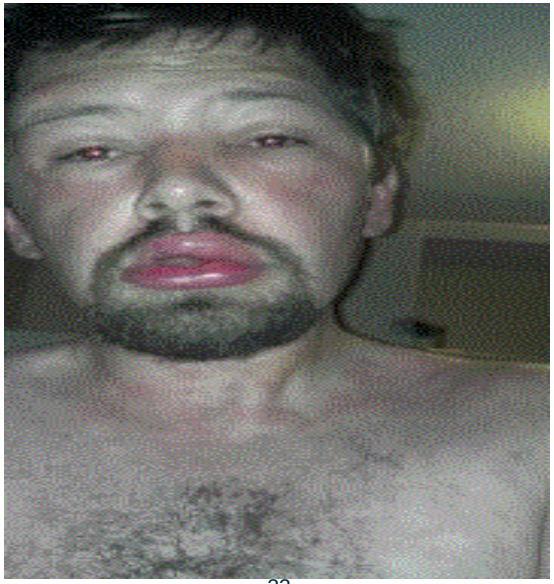
Group Exercise

Group Exercise

Case Study

How would you Classify and Treat this Patient ?

You and your partner are called to a house late one evening, A 42 year old male presents with a new onset rash on his chest, angio oedema of both lips and is struggling to breath.
History – while sunbathing out his back garden he fell a sleep. No known allergies



Case Study

How would did Classify and Treat this Patient ?

Severe Anaphylactic allergic reaction

Treat reaction as per CPG's

Requesting ALS

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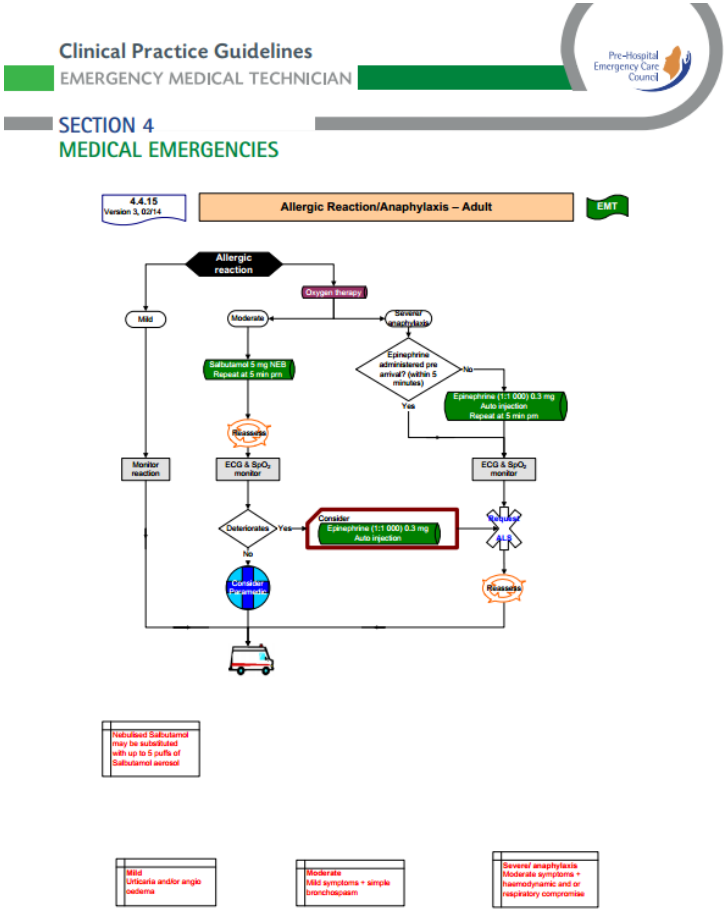
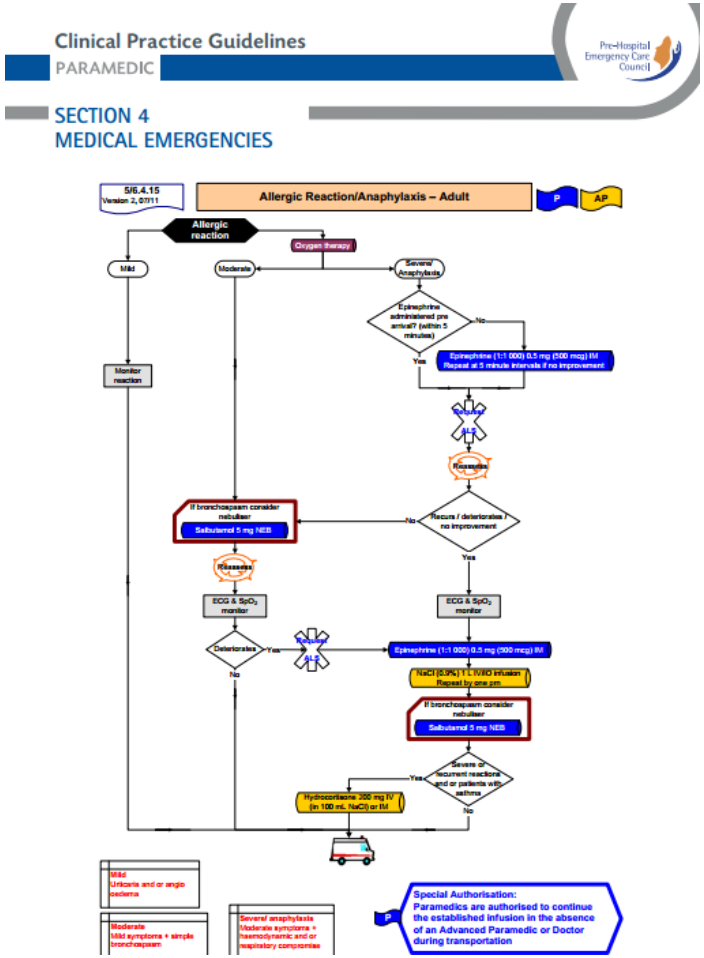
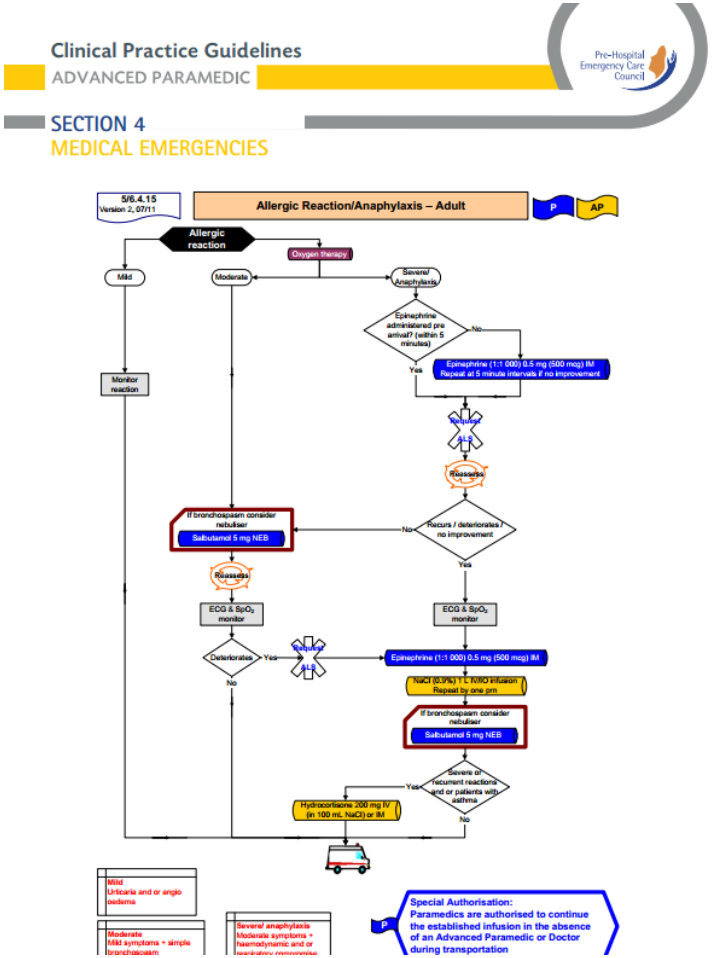
EMT CPG


Clinical Practice Guidelines
EMERGENCY MEDICAL TECHNICIAN
Pre-Hospital Emergency Care Council
SECTION 4
MEDICAL EMERGENCIES
4.4.15
Version 3, 03/14
Allergic Reaction/Anaphylaxis – Adult
EMT
Allergic reaction
Oxygen therapy
Mild
Moderate
Severe/ anaphylaxis
Salbutamol 5 mg NEB
Repeat at 5 min prn
Epinephrine administered pre arrival? (within 5 minutes)
No
Yes
Epinephrine (1:1 000) 0.3 mg
Auto injection
Repeat at 5 min prn
Reassess
Monitor reaction
ECG & SpO2 monitor
ECG & SpO2 monitor
Deteriorates
Yes
No
Consider
Epinephrine (1:1 000) 0.3 mg
Auto injection
Nebulise
ALS
Reassess
Consider Paramedic
Nebulised Salbutamol may be substituted with up to 5 puffs of Salbutamol aerosol
Mild
Urticaria and/or angio oedema
Moderate
Mild symptoms + simple bronchospasm
Severe/ anaphylaxis
Moderate symptoms + haemodynamic and or respiratory compromise

Paramedic CPG



Advanced Para CPG



Questions

Conclusion

- Anything can trigger a reaction
- Be aware that mild or moderate can become severe rapidly
- Severe is a medical emergency and life threatening
- Treat in-line with 5th edition PHECC CPG's

Test

- Define an allergic reaction

An allergic reaction is an abnormal immune response the body develops when the person is re-exposed to a substance or allergen

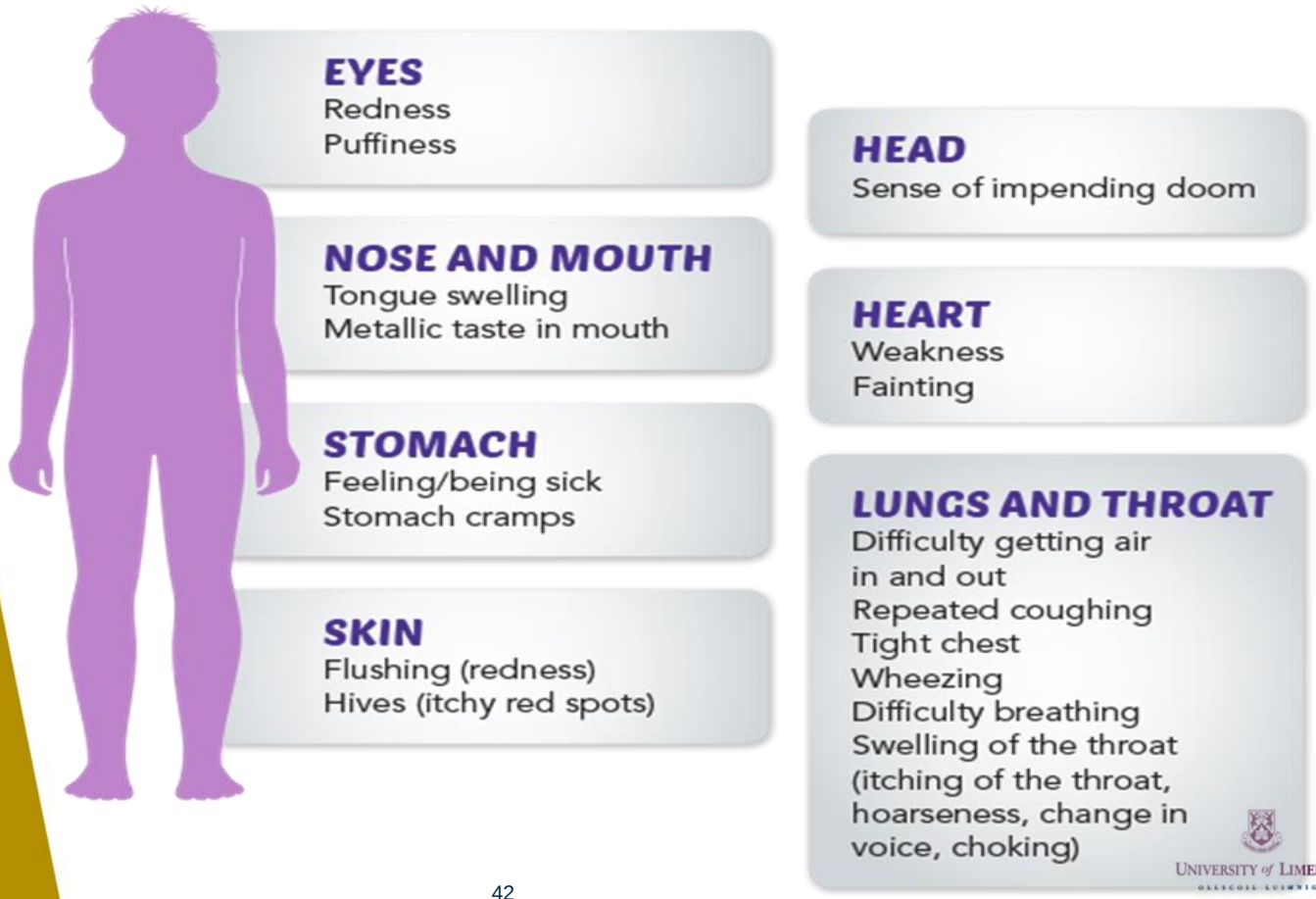
- Define an anaphylactic reaction

Is an acute, potentially life-threatening hypersensitive reaction.

- List six signs and symptoms of an allergic reaction

Test

- List six signs and symptoms of an allergic reaction



References

1.*EAACI, European Academy of Allergy and Clinical Immunology*

2. *Nancy Caroline's Emergency Care in the streets 6th edition*

3. *World Allergy Organization*

4. *Pre-Hospital Emergency Care Council, Clinical Practice Guidelines*

5. *Allergy Ireland.com*

6. *Ewan PW. Clinical study of peanut and nut allergy in 62 consecutive patients; new features and associations. BMJ 1996;312:1074-8*

7. *Association of Anaesthetists of Great Britain and Ireland and British Society of Allergy and Clinical Immunology. Suspected anaphylactic reactions associated with anaesthesia.*

8. *Anaphylaxis Ireland.org*

10. *HSE.ie/Treating someone with Anaphylaxis*

11. *Allergy chat. org/Anaphylaxis*

Wednesday, 07 January 2015

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Sepsis

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Sepsis kills

Objectives

- Define SIRS, sepsis, severe sepsis and septic shock.
- Explore the pre-hospital role in screening for sepsis, identifying sepsis and communicating pre-hospital findings and pre-hospital care
- Use scenarios to learn about the pre-hospital identification of a patient with suspected sepsis

What is the problem ?

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- Sepsis incidence has been increasing annually at a rate of 8-13%
- 10th leading cause of death in USA
- 750,000 new cases of sepsis per annum in US
- Mortality for these 28 to 50%

http://www.cdc.gov/sepsis/basic/qa.html

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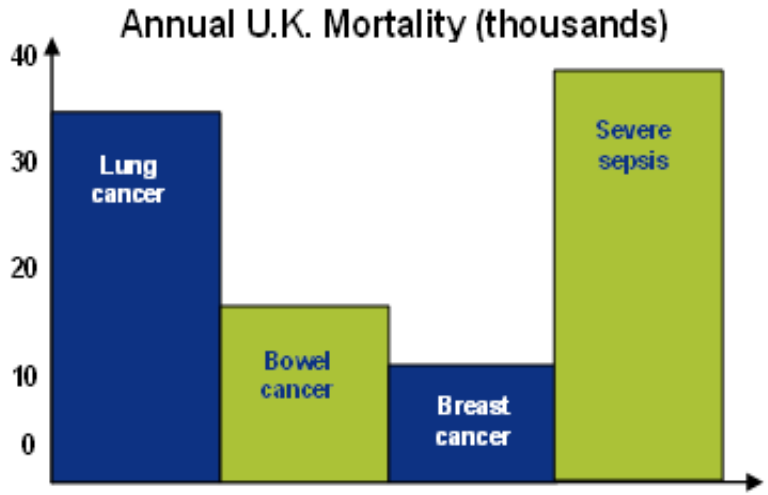
What is the problem ?



- More than breast and bowel cancer combined
- 37,000 deaths in UK annually
- Sepsis is the primary cause of maternal death in the ante and post natal periods *(CMACE report, 2011)*

www.1000livesplus.wales.**nhs**.uk/opendoc/196287

What is the cost of Sepsis ?

- Cost $16.7 billion in US
- Cost UK NHS £2.5 billion
- Cost in Europe approximately £6 billion per year
- Survivors report reduction in quality of life, pain and suffering

Why the increase in sepsis ?

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- The population is aging
- People have more chronic illnesses,
- People are getting more invasive procedures
- Increasing use of high risk interventions in all age groups

http://www.cde.gov/sepsis/basic/ga.htm

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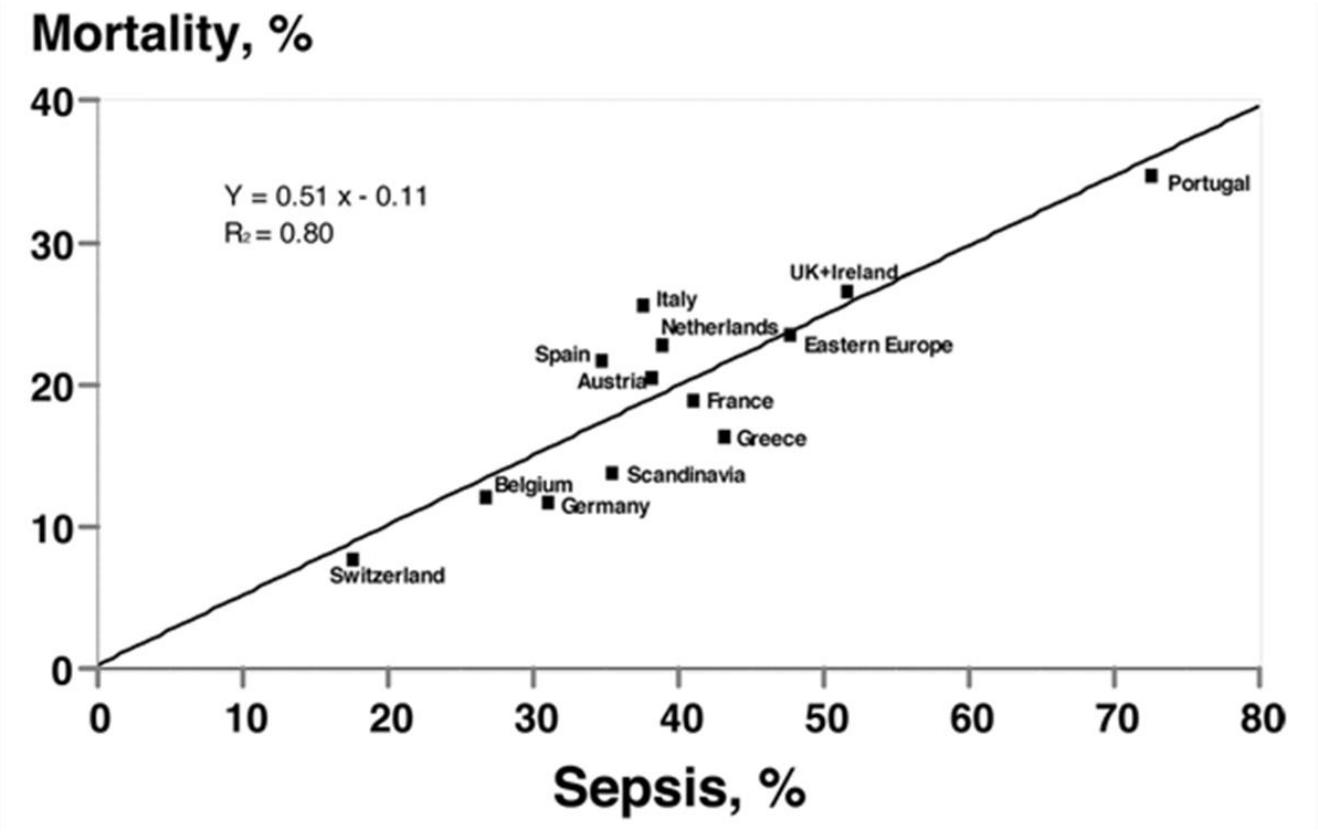
Why the increase in sepsis ?

- Increase in immunocompromised patients
- Use of immunosuppressive drugs, chemotherapy, and organ transplants
- increasing antibiotic resistance
- increasing awareness and tracking of sepsis

http://www.cdc.gov/sepsis/basic/qa.html

Sepsis mortality



Sepsis in European ICU: SOAP study. Critical Care Medicine 2006

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A patient with sepsis is 5 times more likely to die than a patient who has suffered a heart attack or stroke

(Vincent et al. (2006) Sepsis in European intensive care units: results of the SOAP study. Crit Care Med. Feb; 34(2):344-53

So What is Sepsis

Sepsis

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SIRS (Systemic inflammatory response syndrome):
The clincial syndrome that results from a deregulated inflammatory response or to a non-infections insult.

Sepsis: SIRS that is secondary to infection that has been disagnosed clinically.

Severe Sepsis: Sepsis plus at least one sign of hypoperfusion or organ dysfunction that is new and not explained by other known etiology of organ dysfunction.

Septic Shock: Severe sepsis associated with refractory hypotension (BP < 90/60 mmHg) despite adequate fluid resuscitation and/or serum lactate level ≥ 4.0 mmol/L.

PHECC Field Guide for Practitioners (2014)

SIRS

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THE SEPSIS CONTINUUM

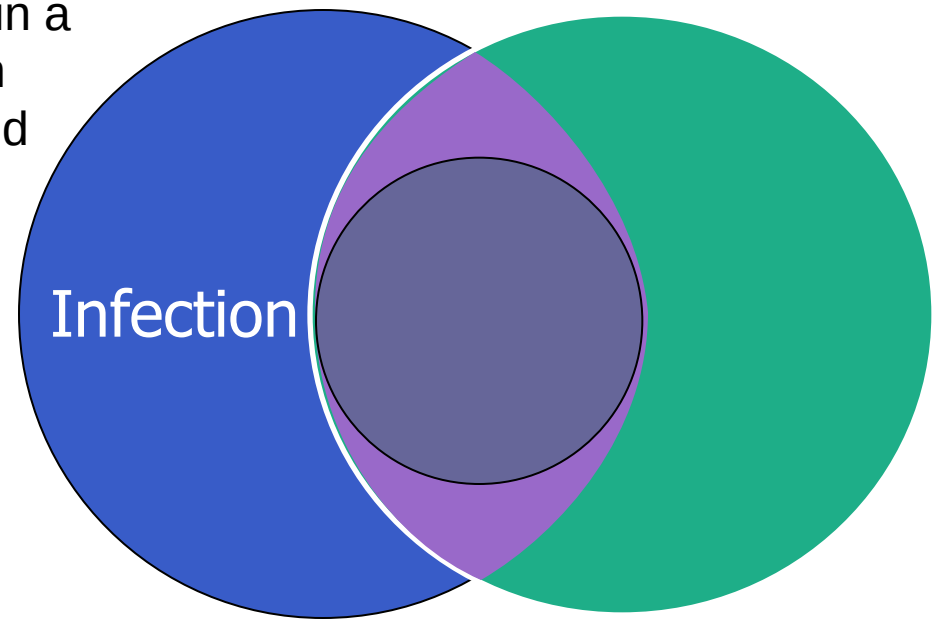
SIRS	Sepsis	Severe Sepsis	Septic Shock
• A clinical response arising from a nonspecific insult, with ≥2 of the following: • T >38°C or <36°C • HR >90 beats/min • RR >20/min • WBC >12,000/mm³ or <4,000/mm³ or >10% bands	SIRS with a presumed or confirmed infectious process	Sepsis with organ failure	Refractory hypotension

SIRS = systemic inflammatory response syndrome

Chest 1992;101:1644.

Infection: Part of a bigger picture

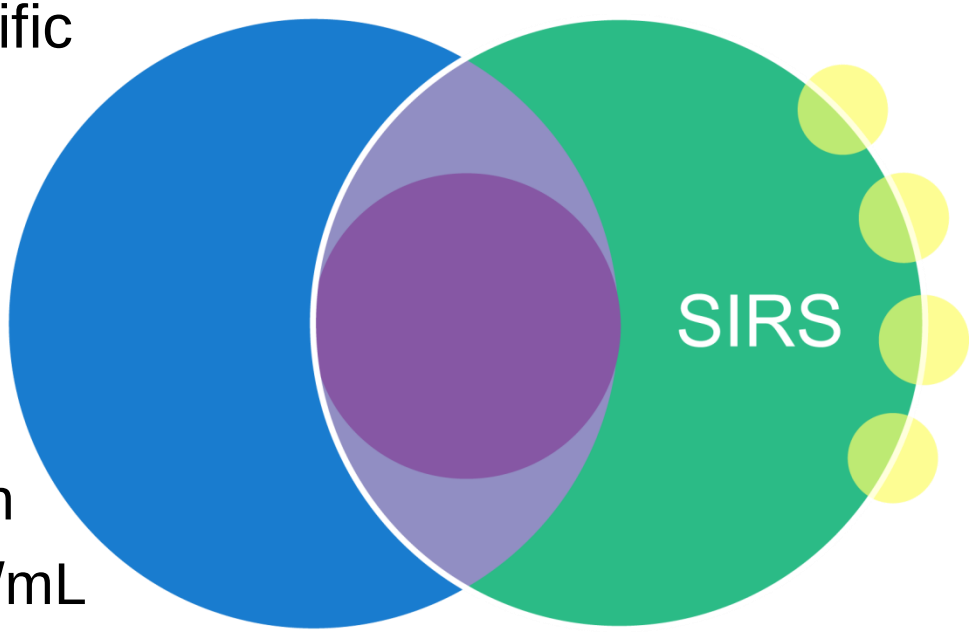
- Infection:
  - Presence of organisms in a closed space or location where not normally found



Adapted from: Bone RC et al. *Chest.* 1992;101:1644-55.
Opal SM et al. *Crit Care Med*. 2000;28:S81-2.

SIRS: Systemic Inflammatory Response Syndrome

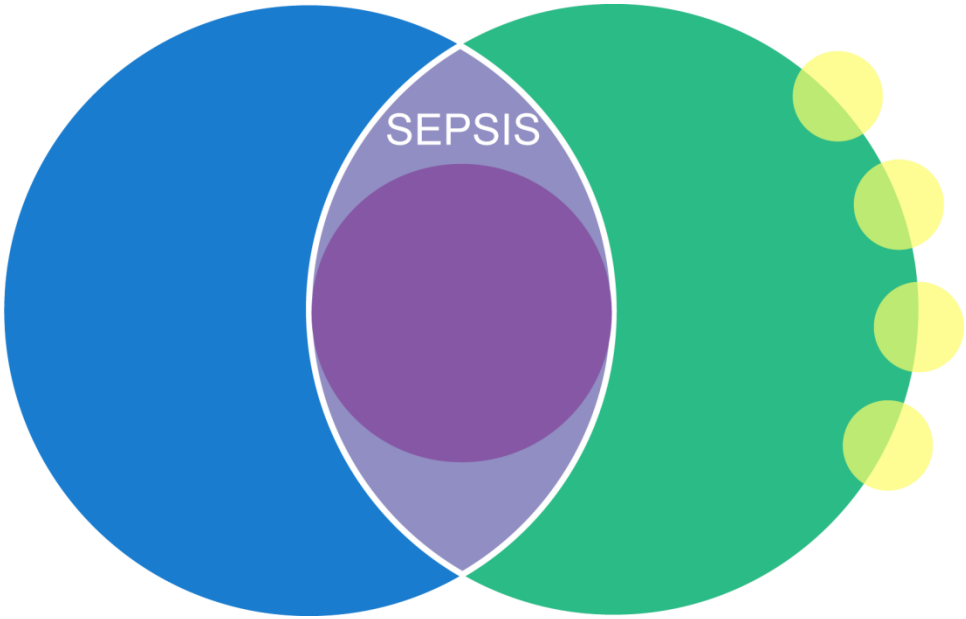
- SIRS: A clinical response arising from a nonspecific insult manifested by ≥2 of the following:
  - Temperature ≥38°C or ≤36°C
  - HR ≥90 beats/min
  - Respirations ≥20/min
  - WBC count ≥12,000/mL or ≤4,000/mL or >10% immature neutrophils



Adapted from: Bone RC et al. *Chest.* 1992;101:1644-55.
Opal SM et al. *Crit Care Med*. 2000;28:S81-2.

Sepsis: More Than Just Inflammation

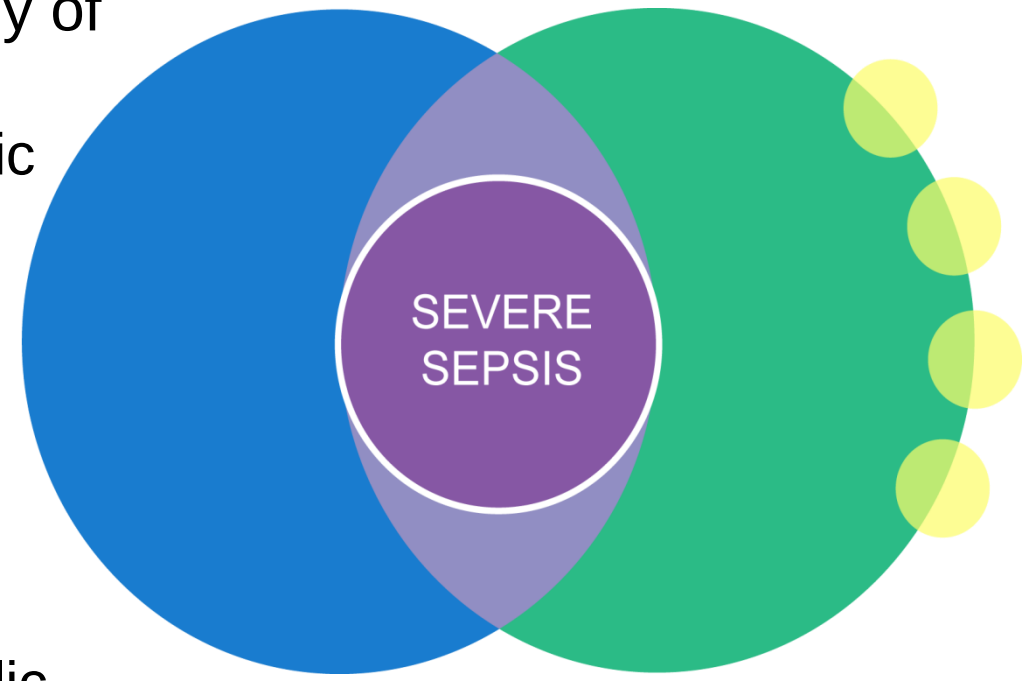
- Sepsis:
  - Known or suspected infection
  - SIRS criteria



Adapted from: Bone RC et al. *Chest.* 1992;101:1644-55.

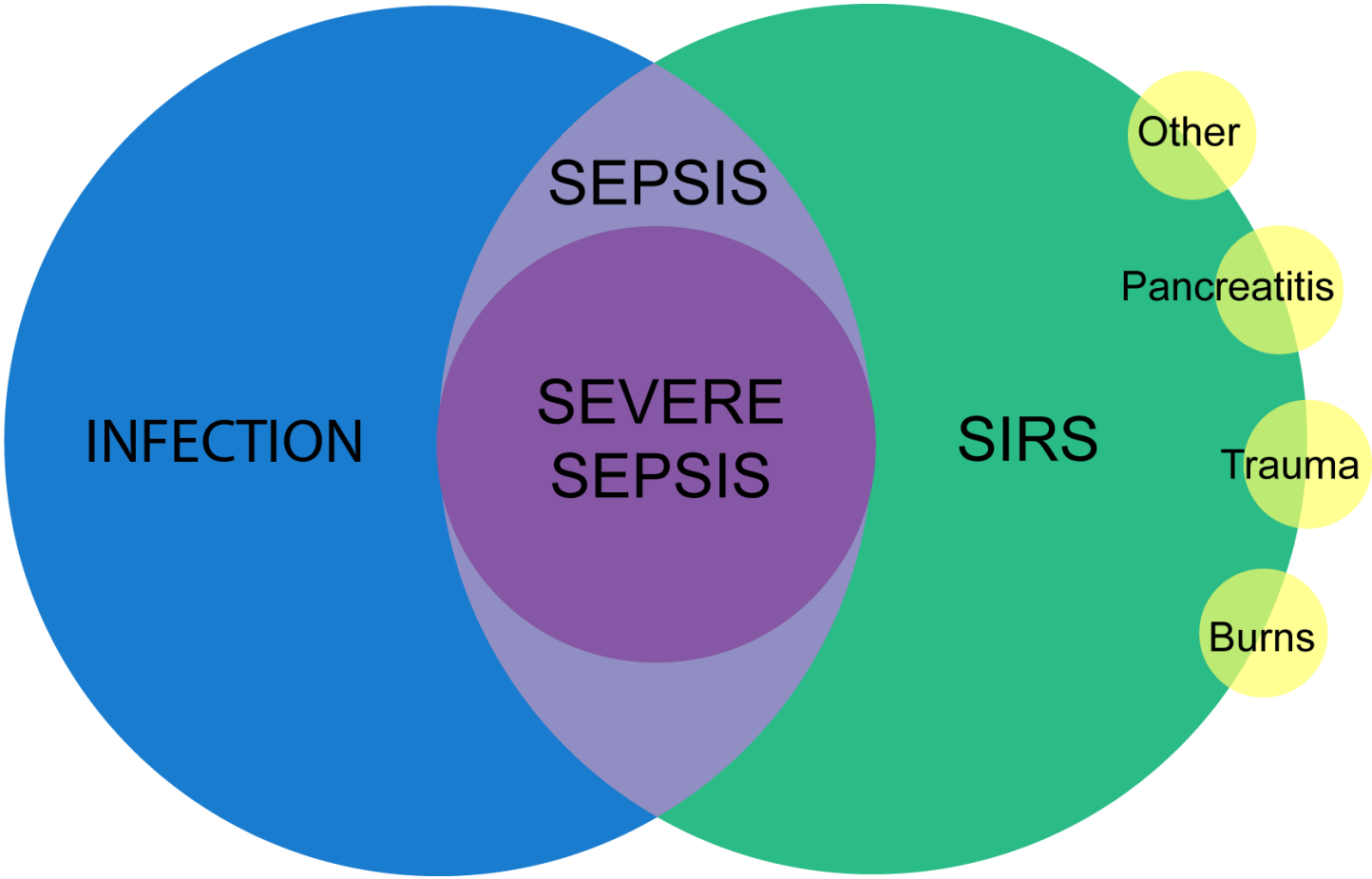
Severe Sepsis: Acute Organ Dysfunction

- Severe Sepsis =
  Sepsis with signs of ***acute*** organ dysfunction in any of the following systems:
  - Cardiovascular (septic shock)
  - Renal
  - Respiratory
  - Hepatic
  - Hemostasis
  - CNS
  - Unexplained metabolic acidosis



Adapted from: Bone RC et al. *Chest.* 1992;101:1644-55.

Sepsis: A Complex Disease



Adapted from: Bone RC et al. *Chest.* 1992;101:1644-55.
Opal SM et al. *Crit Care Med*. 2000;28:S81-2.

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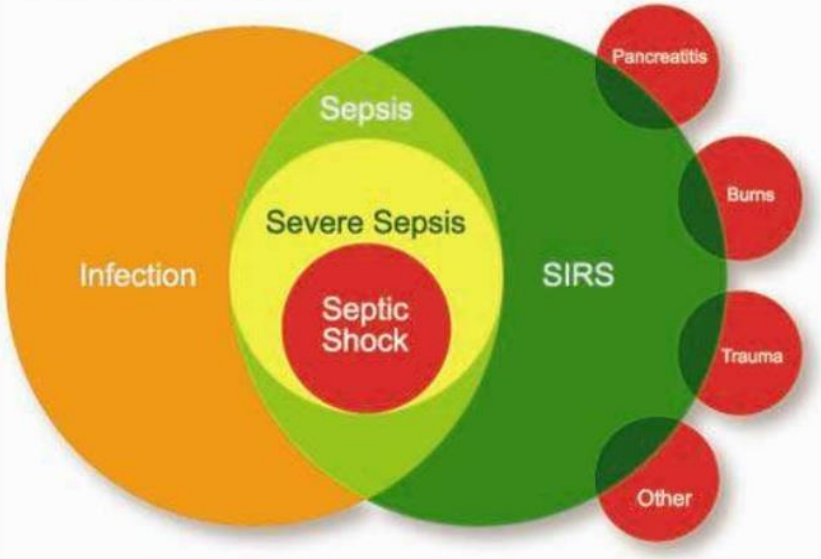
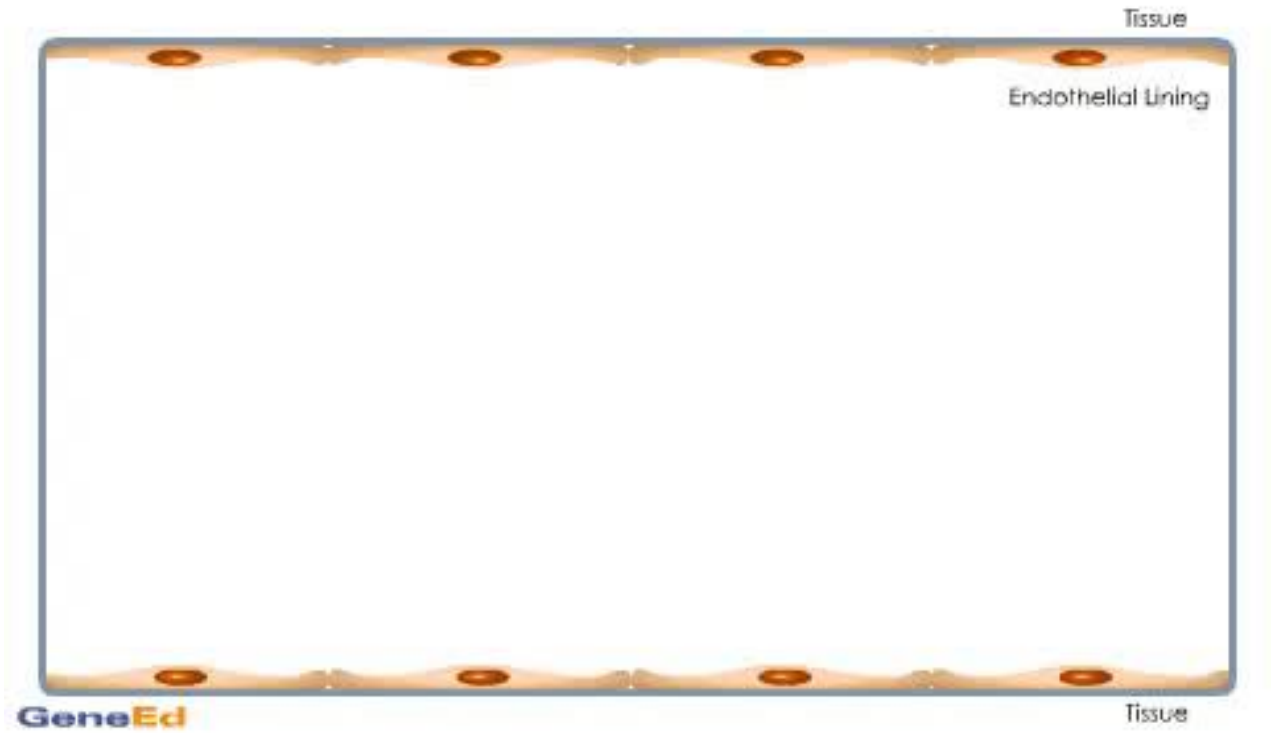
Relationship of
Infection, SIRS, Sepsis, Severe Sepsis and Septic Shock



Bone et al. *Chest* 1992; 101:1644

Sepsis Simplified



Early Goal Directed therapy

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The New England Journal of Medicine

EARLY GOAL-DIRECTED THERAPY IN THE TREATMENT OF SEVERE SEPSIS AND SEPTIC SHOCK

EMANUEL RIVERS, M.D., M.P.H., BRYANT NGUYEN, M.D., SUZANNE HAVSTAD, M.A., JULIE RESSLER, B.S., ALEXANDRIA MUZZIN, B.S., BERNHARD KNOBLICH, M.D., EDWARD PETERSON, PH.D., AND MICHAEL TOMLANOVICH, M.D., FOR THE EARLY GOAL-DIRECTED THERAPY COLLABORATIVE GROUP*

RESULTS: 260 patients enrolled into the study. Mortality 30.5 (EGDT) vs 46.5

CONCLUSION: Early goal directed therapy provides significant benefits with respect to outcome in patients with severe sepsis and septic shock

Trials examining EGDT

- USA (ProCESS: protocolized care for early septic shock)
- Australasia (ARISE: Australasian resuscitation in sepsis evaluation)
- UK (ProMISe: protocolised management in sepsis)

For each hour's delay in administering antibiotics in septic shock, mortality increases by 7.6%

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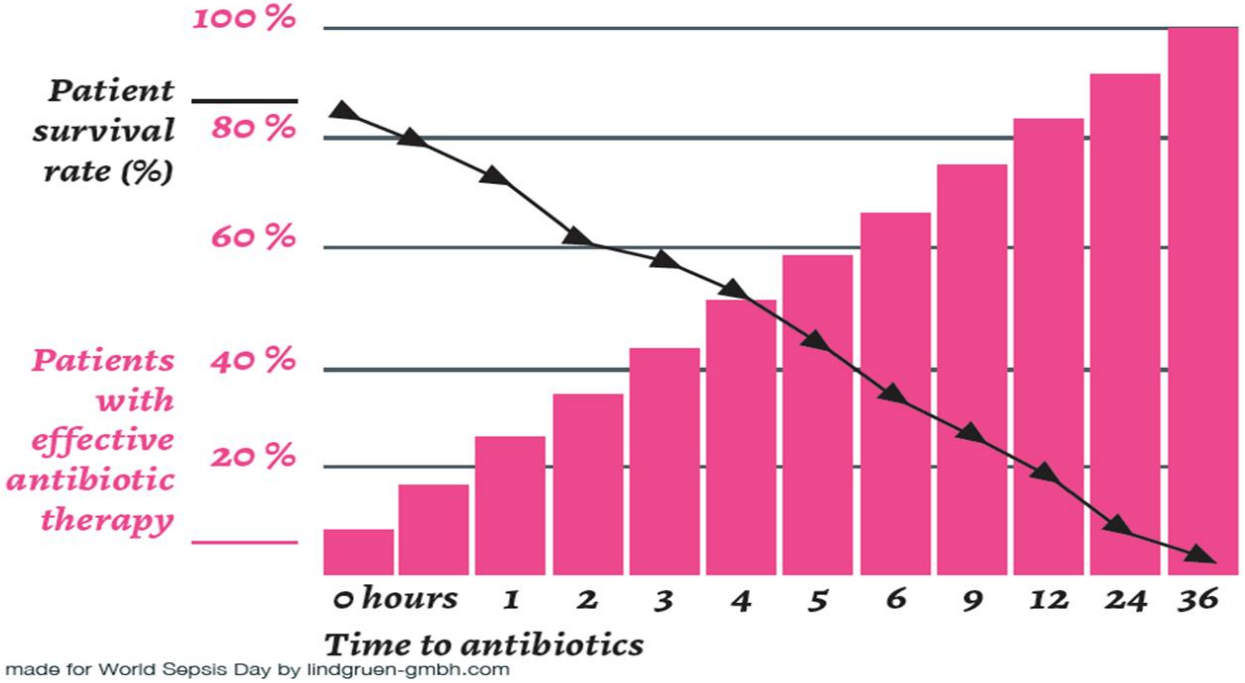

(Kumar et al. 2006. Duration of hypotension before initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock. Crit. Care Med. 34(6) pp 1589-1596)

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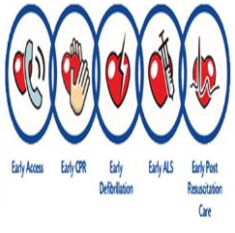
Time Sensitive



Out of hospital cardiac arrest

Acute myocardial infarction

Stroke

Golden Hour

Polytrauma

Surviving Sepsis

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Special Articles

Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2012

R. Phillip Dellinger, MD[1]; Mitchell M. Levy, MD[2]; Andrew Rhodes, MB BS[3]; Djillali Annane, MD[4]; Herwig Gerlach, MD, PhD[5]; Steven M. Opal, MD[6]; Jonathan E. Sevransky, MD[7]; Charles L. Sprung, MD[8]; Ivor S. Douglas, MD[9]; Roman Jaeschke, MD[10]; Tiffany M. Osborn, MD, MPH[11]; Mark E. Nunnally, MD[12]; Sean R. Townsend, MD[13]; Konrad Reinhart, MD[14]; Ruth M. Kleinpell, PhD, RN-CS[15]; Derek C. Angus, MD, MPH[16]; Clifford S. Deutschman, MD, MS[17]; Flavia R. Machado, MD, PhD[18]; Gordon D. Rubenfeld, MD[19]; Steven A. Webb, MB BS, PhD[20]; Richard J. Beale, MB BS[21]; Jean-Louis Vincent, MD, PhD[22]; Rui Moreno, MD, PhD[23]; and the Surviving Sepsis Campaign Guidelines Committee including the Pediatric Subgroup*

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Evidence-Based, Organized Practice Guidelines within an Organized Process

"BUNDLE"

Critical Care Consultants, 2013

SURVIVING SEPSIS CAMPAIGN BUNDLES

TO BE COMPLETED WITHIN 3 HOURS:

1) Measure lactate level
2) Obtain blood cultures prior to administration of antibiotics
3) Administer broad spectrum antibiotics
4) Administer 30 mL/kg crystalloid for hypotension or lactate ≥4mmol/L

TO BE COMPLETED WITHIN 6 HOURS:

5) Apply vasopressors (for hypotension that does not respond to initial fluid resuscitation) to maintain a mean arterial pressure (MAP) ≥ 65 mm Hg
6) In the event of persistent arterial hypotension despite volume resuscitation (septic shock) or initial lactate ≥4 mmol/L (36 mg/dL):
   - Measure central venous pressure (CVP)*
   - Measure central venous oxygen saturation ($Scvo_2$)*
7) Remeasure lactate if initial lactate was elevated*

*Targets for quantitative resuscitation included in the guidelines are CVP of ≥8 mm Hg, $Scvo_2$ of ≥70%, and normalization of lactate.

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UHL Sepsis pathway

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ADULT SEPSIS PATHWAY

Department of Emergency Medicine
University Hospital Limerick

Page 1

Does the patient have sepsis?

*SIRS ? (2 or more)
- ☐ Temperature > 38C or < 36C
- ☐ RR > 20 or pCO_2 < 4.7kpa
- ☐ Heart rate > 90 bpm
- ☐ WCC > 12 or < 4

+ Infection source = **SEPSIS

YES

Management Checklist
- ☐ Inform registrar or consultant. Move patient to resus room.
- ☐ Manage ABC, Disability
- ☐ Glucose
- ☐ 2 IV lines
- ☐ Blood test : FBC, U&E, LFT, Bone Profile, Coagulation screen, Troponin, Group & Screen
- ☐ Venous blood gas and ***LACTATE. ABG indicated only if hypoxic.
- ☐ 2 Blood Cultures from 2 different sites (if possible, before antibiotics are given)
- ☐ Search for source of infection and control infection.
- ☐ Urinalysis
- ☐ CXR
- ☐ ECG
- ☐ IV antibiotics given within 30 min. Use antibiotic guideline below. Give antibiotic empirically if source unknown.

Three things you can do

- Screen for sepsis
- Identify sepsis
- Communicate results to colleagues and escalate treatment if necessary

Three Things You Can Do

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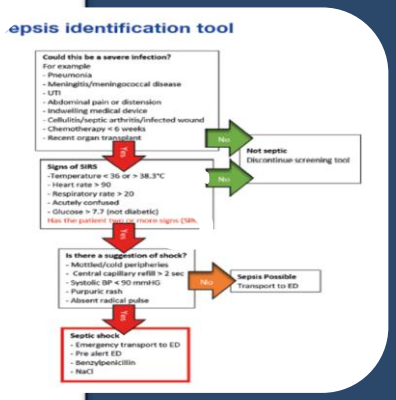

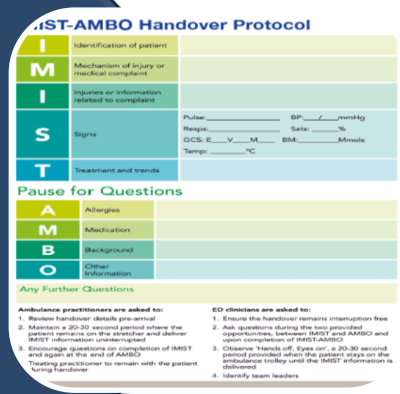

Screen

Identify

Communicate

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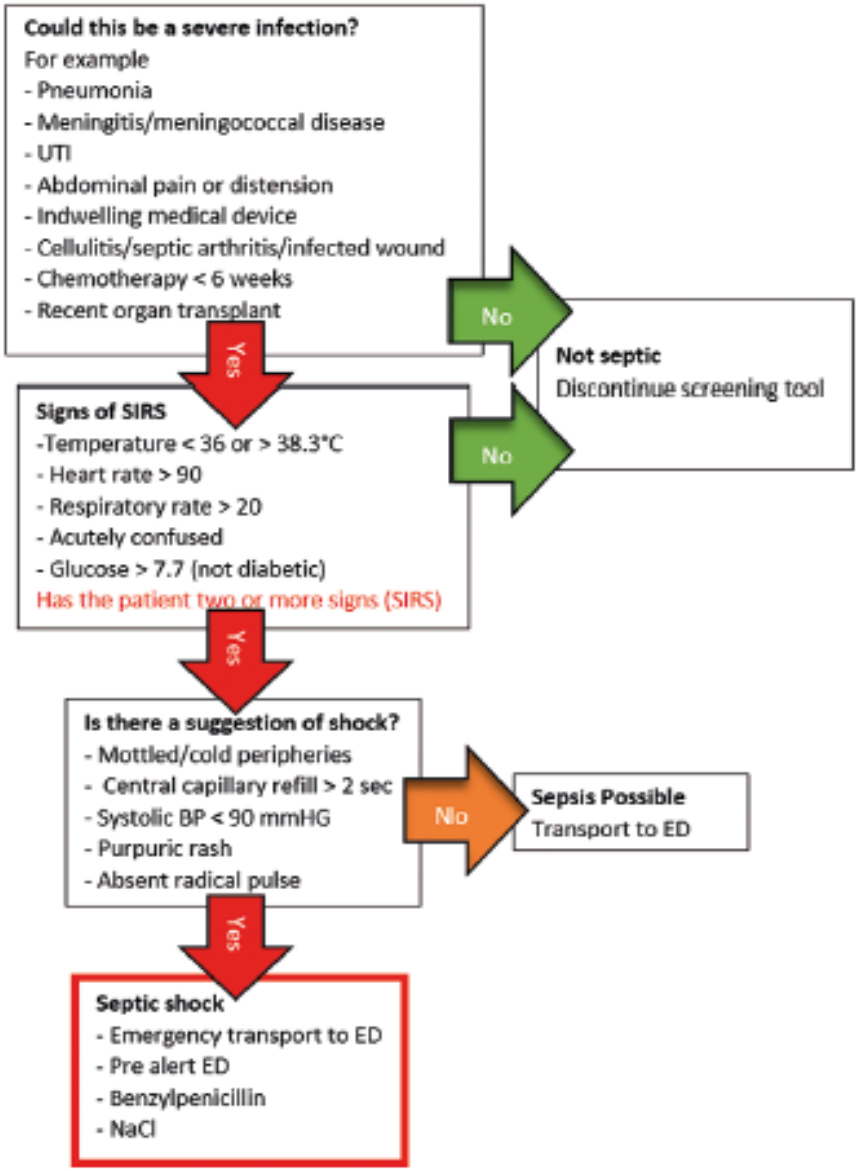
Sepsis identification tool



PHECC Field Guide for Practitioners (2014)

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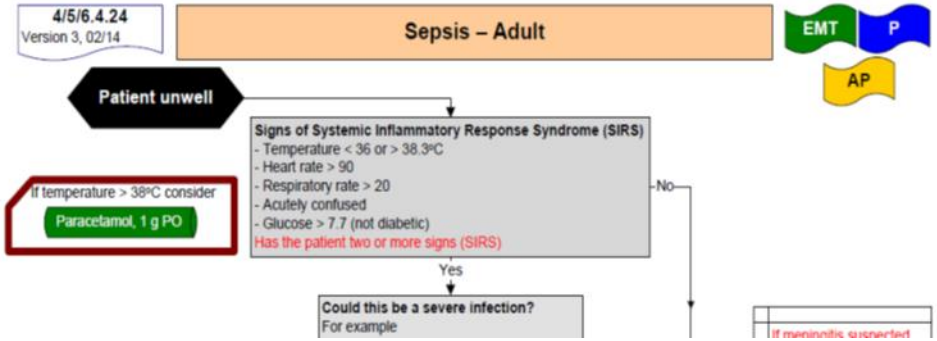
Clinical Practice Guidelines

ADVANCED PARAMEDIC

Pre-Hospital Emergency Care Council

SECTION 4

MEDICAL EMERGENCIES



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Herlitz *et al. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine* 2012, **20**:42
http://www.sjtrem.com/content/20/1/42

SCANDINAVIAN JOURNAL OF trauma, resuscitation & emergency medicine

REVIEW **Open Access**

Suspicion and treatment of severe sepsis. An overview of the prehospital chain of care

Johan Herlitz[1,3*], Angela Bång[1], Birgitta Wireklint-Sundström[1], Christer Axelsson[1], Anders Bremer[1], Magnus Hagiwara[1], Anders Jonsson[1], Lars Lundberg[1], Björn-Ove Suserud[1] and Lars Ljungström[2]

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ASHICE

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Radio Report for Emergency Dept.

When patients require urgent medical attention on arrival at the ED it is essential that an appropriate patient report precedes their arrival.

The report needs to be clear and concise yet transfer all relevant information.

It is good practice to identify your clinical level when communicating with the ED.

The recommended format is ASHICE.

A – Age of patient
S – Sex of patient
H – History of event
I – Illness / injury
C – Condition (vital signs & reason for pre-alerting)
E – Estimated time of arrival

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PHECC Field Guide for Practitioners (2014)

Handover

- Vulnerable point of care
- Busy, overcrowded and distracting environment
- Inter-professional involvement in patient care
- Time pressures

Handover susceptible to

- Information loss
- Misinformation
- High rates of error

Handover

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IMIST-AMBO Handover Protocol

I	Identification of patient	
M	Mechanism of injury or medical complaint	
I	Injuries or information related to complaint	
S	Signs	Pulse:_____ BP:___/___mmHg Resps:_____ Sats: _____% GCS: E___V___M___ BM:_____Mmols Temp: _____°C
T	Treatment and trends	

Pause for Questions

A	Allergies	
M	Medication	
B	Background	
O	Other Information	

Any Further Questions

Ambulance practitioners are asked to:

1. Review handover details pre-arrival
2. Maintain a 20-30 second period where the patient remains on the stretcher and deliver IMIST information uninterrupted
3. Encourage questions on completion of IMIST and again at the end of AMBO
4. Treating practitioner to remain with the patient during handover

ED clinicians are asked to:

1. Ensure the handover remains interruption free
2. Ask questions during the two provided opportunities, between IMIST and AMBO and upon completion of IMIST-AMBO
3. Observe 'Hands off, Eyes on', a 20-30 second period provided when the patient stays on the ambulance trolley until the IMIST information is delivered
4. Identify team leaders

55

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Handover tools mnemonics

- SBAR/ISBAR
- ASHICE
- SAMPLE
- IMIST-AMBO

ISBAR
Communication Tool

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I **Identify**	**Identify: You, Doctor, Patient** Is this Dr. _____? This is _____ *(e.g Mary, I am team leader on 7A)* I am calling about _____ *(e.g Mr David Jones)*
S **Situation**	**Situation: Why are you calling?** I am calling because _____ *(e.g Total EWS of 6 or 3 in a single parameter)* Resp Rate _____ Sats _____ O_2 Delivery _____ Temp _____ Heart Rate _____ BP _____ Urinary Output _____ LOC _____ *(only use abnormal reading initially)*
B **Background**	**Background: What is relevant background?** They are _____ years old Admitted for _____ Recent surgery or procedures _____ Relevant past medical/surgical history _____ They currently have _____ *(e.g. IV fluids, Urinary Catheter, PCA)*
A **Assessment**	**Assessment: What do you think is the problem?** I think _____ *(e.g they are hypovolaemic)* *(you can skip this if they don't know what is wrong)*
R **Recommendation**	**Recommendation: What do you want them to do?** I would like you to _____ *(e.g come and review him please)* Is there anything you would like me to do before you get here?

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Appendix F *Patient Observation Scores*

Page 1/5

	Date	21- Oct -2012	21- Oct -2012	21- Oct - 2012	22- Oct- 2012	22-Oct- 2012	22-Oct- 2012	22- Oct - 2012	22- Oct – 2012	22- Oct 2012	22- Oct - 2012	22- Oct - 2012
	Time	09.35	17.00	22.00	00.30	03.30-	06.00	06.50	08.30	11.00	15.25	18.00
RESP (write rate in box)	= or > 30											
	21- 29											
	09 - 20	--	--	--				18	18		18	--
	0 - 08											
O2 Saturations	95 - 100%							99%	98%		97%	97%
	<95%											
O2 %												
Temp	= or >38											
	37.5 - 37.9											
	36 - 37.4	36.8	36.4	36.6				37	36.8		36.8	37.1
	< or = 35.9											
Maternal Heart Rate	= or >120											
	100 - 119											102
	50 - 99	82	90	--				92	92		98	
	0 - 49											
Systolic Blood Pressure	= or > 160											
	140 - 159											
	100 - 139	113	114	100				104	100		94	98
	90 - 99											
	0 - 89											
Diastolic Blood Pressure	= or >100											
	80 - 99											
	50 - 79	73	72	60				66	60		60	62
	0 - 49											

	Date	22- Oct - 2012							23- Oct - 2012	23- Oct - 2012
	Time	21.40							06.00	08.20
RESP (write rate in box)	= or > 30									
	21- 29									
	09 - 20	18							18	
	0 - 08									
O2 Saturations	95 - 100%	98%							97%	
	<95%									
O2 %										
Temp	= or >38									
	37.5 - 37.9									
	36 - 37.4	37							37	37.1
	< or = 35.9									
Maternal Heart Rate	= or >120									
	100 - 119	102								
	50 - 99								84	84
	0 - 49									
Systolic Blood Pressure	= or > 160									
	140 - 159									
	100 - 139	110								
	90 - 99								96	
	0 - 89									
Diastolic Blood Pressure	= or >100									
	80 - 99									
	50 - 79	62							54	
	0 - 49									

	Date	23- Oct - 2012	23- Oct - 2012	23- Oct - 2012	23- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24-Oct- 2012
	Time	08.35	14.45	19.00	21.00	04.15	05.00	06.30	06.45	06.55	07.00	Chart?
RESP (write rate in box)	**= or > 30**											
	21- 29											
	09 - 20	--	18	--	18	--	--	--	18	16	18	
	0 - 08											
O2 Saturations	**95 - 100%**	99%	97%	99%	98%			97%	97%	99%	99%	
	<95%											
O2 %									O2	02 40%	O2	
Temp	**= or >38**							39.6				39.6
	37.5 - 37.9					37.7	37.5				37.9	
	36 - 37.4	36.6	37	36.6	36.8							
	< or = 35.9											
Maternal Heart Rate	**= or >120**							160	166	144	158	160
	100 - 119		100	114								
	50 - 99	84										
	0 - 49											
Systolic Blood Pressure	**= or > 160**											
	140 - 159											
	100 - 139		106	108	106				130	110	108	
	90 - 99	98						94				
	0 - 89											
Diastolic Blood Pressure	**= or >100**											
	80 - 99											
	50 - 79	64	74	66	60			55	74	64	64	
	0 - 49											

	Date	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct -2012
	Time	07.20	07.30	07.50	08.25	08.50	10.00	10.30	12MD	12.50	13.00	13.15
RESP (write rate in box)	**= or > 30**											
	21- 29											
	09 - 20	20	--	18	--	--	18	--	18			
	0 - 08											
O2 Saturations	**95 - 100%**	98%	99%	100%			99%		98%	99%	98%	
	<95%											
O2 %	**40%**	O2	O2	O2	O2	O2	O2	O2	O2	O2	O2	
Temp	**= or >38**											
	37.5 - 37.9		37.9	37.9	37.9							
	36 - 37.4					37.2	37.4	37	37	37		
	< or = 35.9											
Maternal Heart Rate	**= or >120**	164	154	140	144	150		150	142	156	144	156
	100 - 119											
	50 - 99											
	0 - 49											
Systolic Blood Pressure	**= or > 160**											
	140 - 159											
	100 - 139											
	90 - 99	98	98	98		98						
	0 - 89						88	84	74	72	78	80
Diastolic Blood Pressure	**= or >100**											
	80 - 99											
	50 - 79	60	54	54		66	50	50				
	0 - 49								44	40	42	46

	Date	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012	24- Oct - 2012
	Time	13.45	13.50	14.00	14.15	14.30	14.50	15.00	15.10	16.00	16-20
RESP (write rate in box)	**= or > 30**										
	21- 29					26	26	26	26		
	09 - 20				20						
	0 - 08										
O2 Saturations	**95 - 100%**					100%		100%			
	<95%										
O2 %	**40%**					O2		O2			
Temp	**= or >38**										
	37.5 - 37.9										
	36 - 37.4	37.2						37.3			
	< or = 35.9										
Maternal Heart Rate	**= or >120**	144	152	144	144	142	146	144			
	100 - 119										
	50 - 99										
	0 - 49										
Systolic Blood Pressure	**= or > 160**										
	140 - 159										
	100 - 139										
	90 - 99										
	0 - 89	68	65	74	70	80	80	68	80	80	
Diastolic Blood Pressure	**= or >100**										
	80 - 99										
	50 - 79					50	50	50			
	0 - 49	34	30	40	40				40	40	

Scenarios

International Resources

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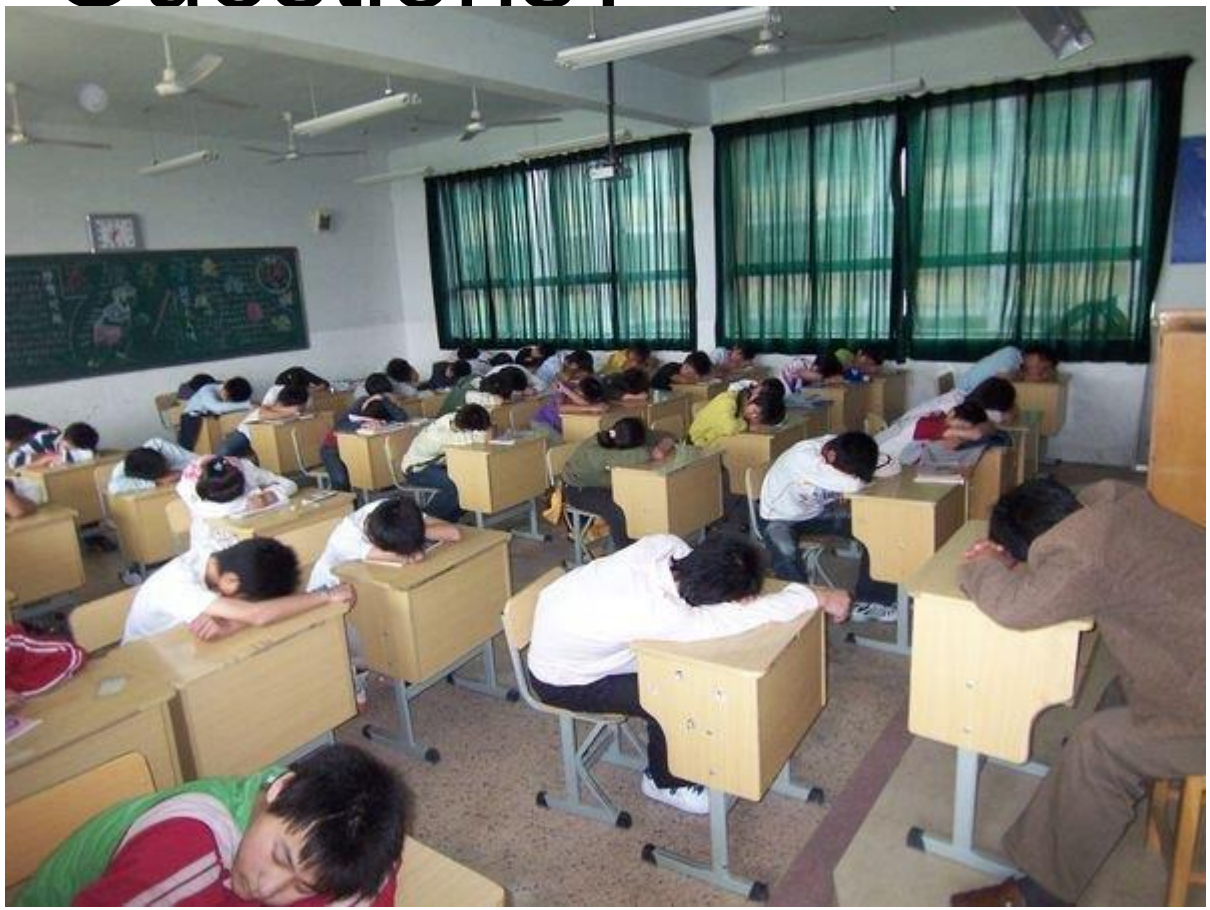
- Surviving Sepsis Campaign: www.survivingsepsis.org
- The UK Sepsis Trust: www.sepsistrust.org
- Global Sepsis Alliance: www.globalsepsisalliance.com
- 1000 Lives Plus (Wales): www.1000livesplus.wales.nhs.uk
- Sepsis Kills (Australia): www.cec.health.nsw.gov.au/programs/seps

Thank you for listening. Questions?



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Wednesday, 07 January 2015

GRADUATE ENTRY MEDICAL SCHOOL

ECG

Rhythm Recognition

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Irish Statistics

- 131,000 adults in Ireland with Coronary Artery Disease (CAD)
- 10,000 deaths per year
- 5000 from Heart Attack (MI)
- On average half of all deaths from MI are Pre-Hospital or in the Emergency Department

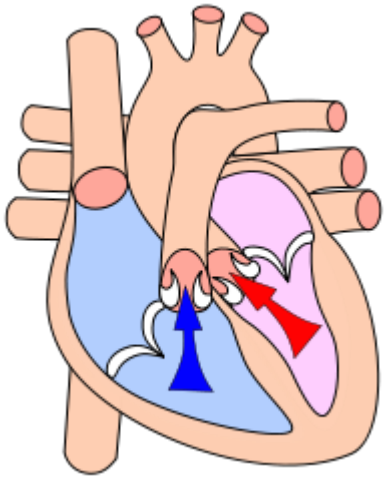
Objectives

- AS per PHECC Paramedic Education and Training Standards 2014 a Paramedic must be able to identify the following rhythms from ECG lead 2:

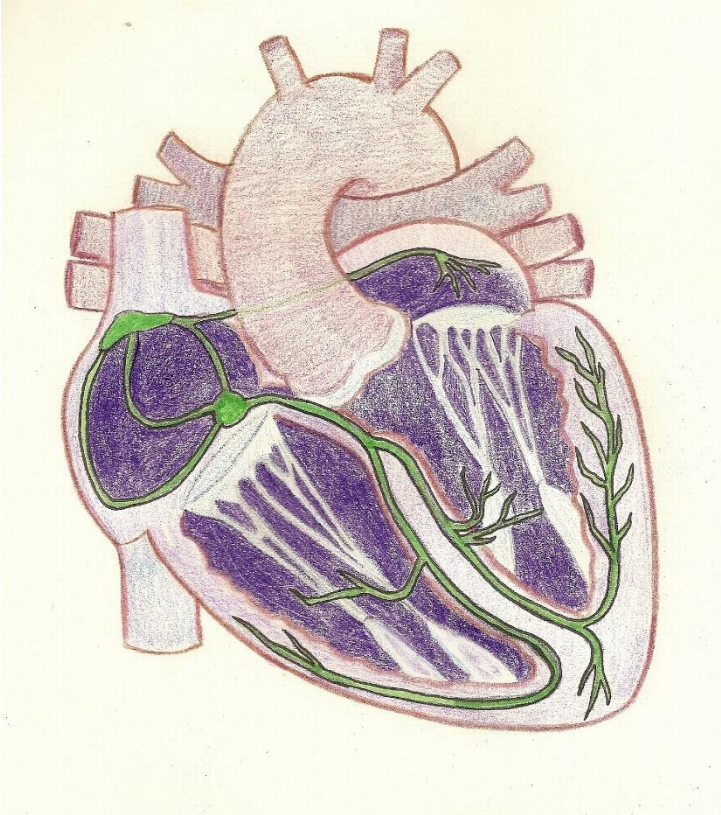
Objectives

- PQRST on rhythm strip
- Normal Sinus Rhythm (NSR)
- Sinus Bradycardia (SB)
- Sinus Tachycardia (ST)
- Premature Ventricular Contractions (PVC's)
- Ventricular Fibrillation (VF)
- Ventricular Tachycardia (VT)
- Pulseless Electrical Activity (PEA)
- Asystole

The Mechanics



The Electrics



Automaticity

Spontaneous initiation of depolarising electric impulses by pacemaker sites within the electric conduction system of the heart

Depolarisation

The process of discharging resting cardiac muscle fibres by an electrical impulse that causes them to contract

Repolarisation

The return of the Ions to their previous resting state , which corresponds with relaxation of the myocardial muscle

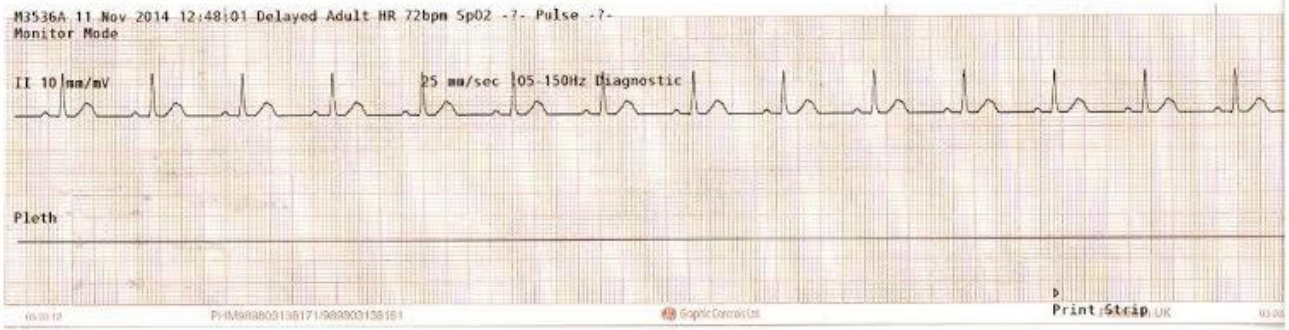
Pacemaker sites

- SA node 60 to 100
- AV node 40 to 60
- Purkinje fibres 20 to 40

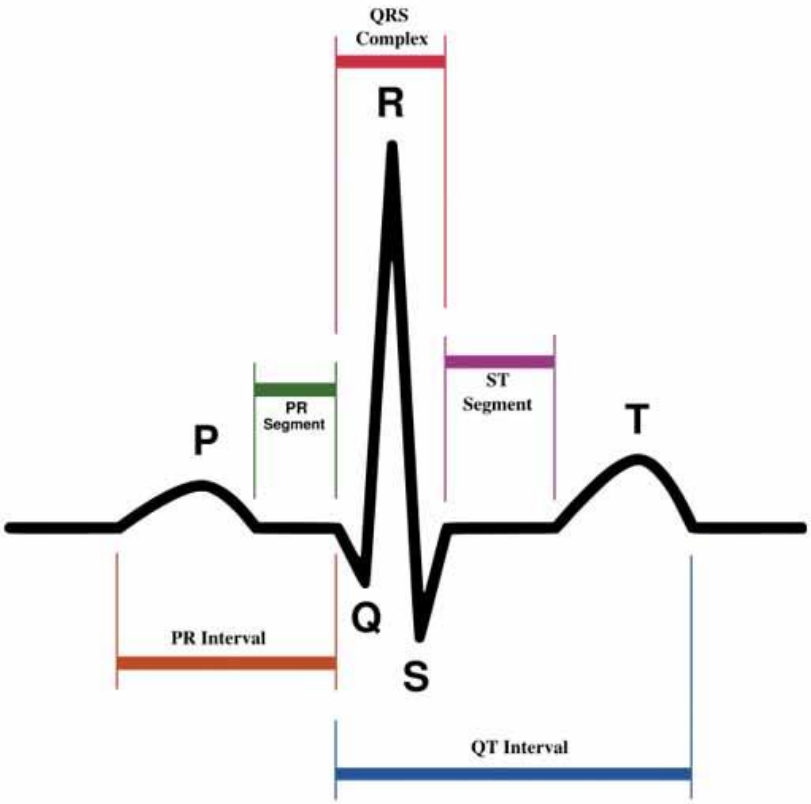
ECG

- Monitoring Lead 1,2 and 3
- Standard graph paper 25mm/s
- One small square = 0.04sec
- One large square = 0.20sec

Lead 2


M3536A 11 Nov 2014 12:48:01 Delayed Adult HR 72bpm SpO2 -?- Pulse -?-
Monitor Mode
II 10 mm/mV
25 mm/sec 05-150Hz Diagnostic
Pleth
Print Strip

PQRST


QRS
Complex
R
PR
Segment
ST
Segment
P
T
Q
S
PR Interval
QT Interval

P wave

- Depolarisation of the Atria
- Small
- Upright
- Uniform

PR interval

- Includes Atrial Depolarisation and passage through AV node
- Between 3 and 5 small boxes

QRS

- Depolarisation of both Ventricles
- Less than 3 small squares

ST segment

Repolarisation of the Ventricles

Isoelectric

Elevated Injury / Infarction

Depressed Ischaemia

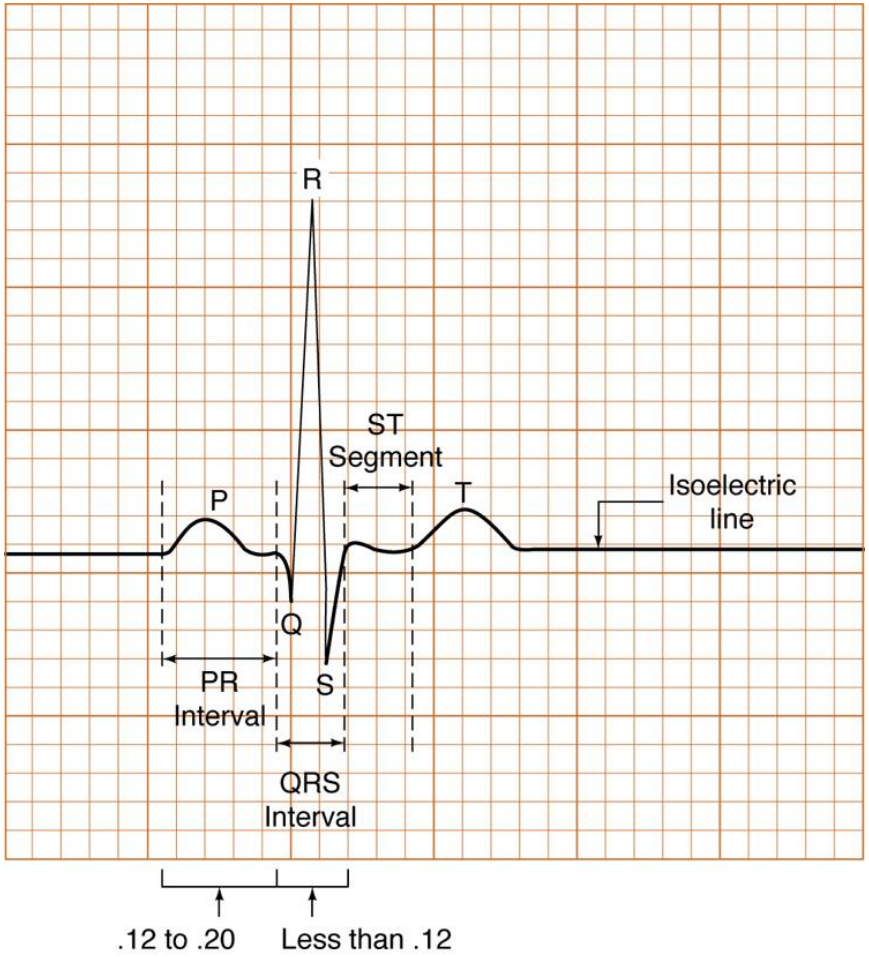
T Wave

- Upright
- Smaller than QRS

QT interval

- Ventricular depolarisation to repolarisation
- Long QT Extended refractory period
- Vulnerable to Arrhythmia's

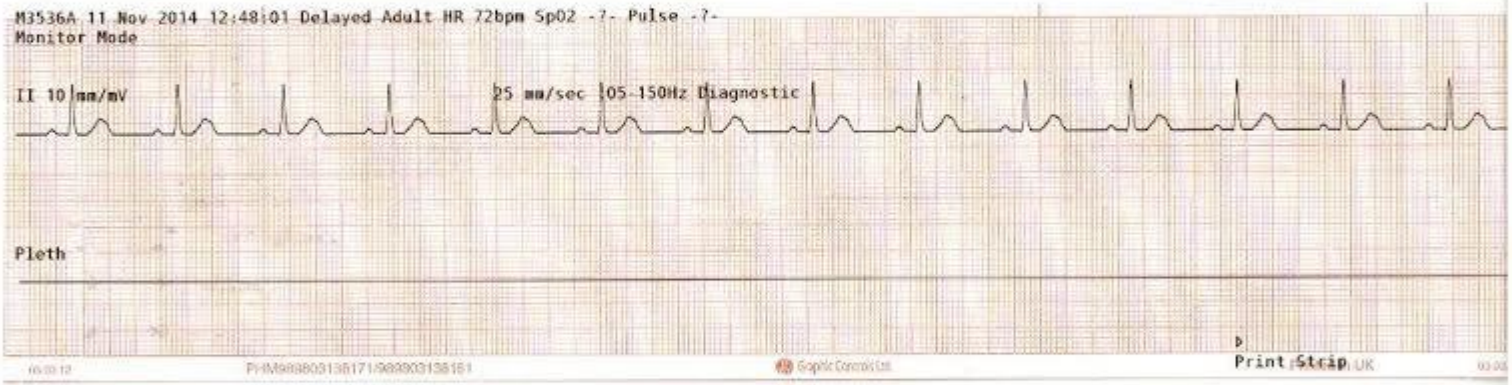
PQRST


R
ST
Segment
P
T
Isoelectric
line
Q
S
PR
Interval
QRS
Interval
.12 to .20
Less than .12

ECG interpretation

- Rate
- Rhythm
- P waves
- P/QRS
- QRS/P
- QRS complex narrow or wide

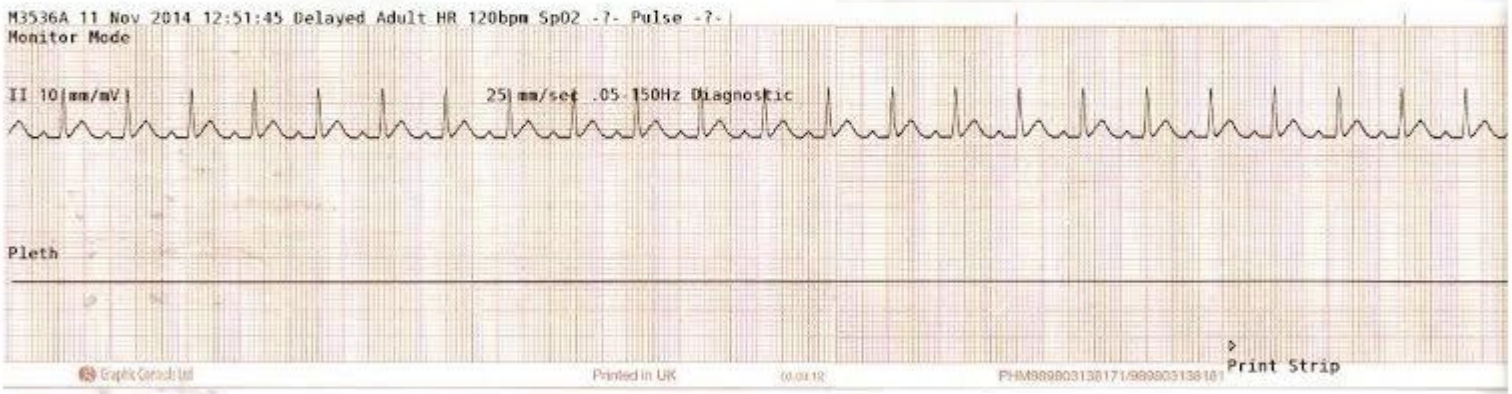
Normal Sinus Rhythm



Normal Sinus Rhythm

- Rate 60 to 100
- Regular
- Normal P waves
- PR interval < 5 small squares
- P/QRS and QRS/P
- Narrow QRS < 3 small boxes

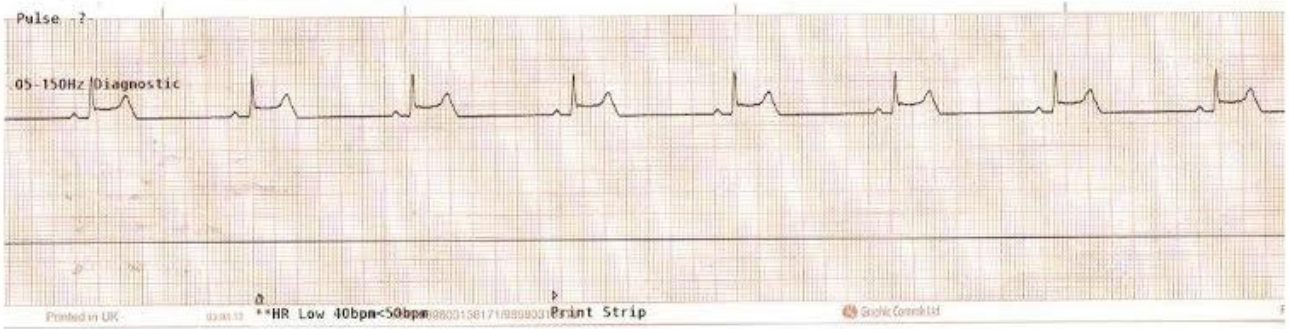
Sinus Tachycardia



Sinus Tachycardia

- Rate > 100
- Regular
- Normal P waves
- PR interval < 5 small boxes
- P/QRS and QRS/P
- Narrow QRS < 3 small boxes

Sinus Bradycardia



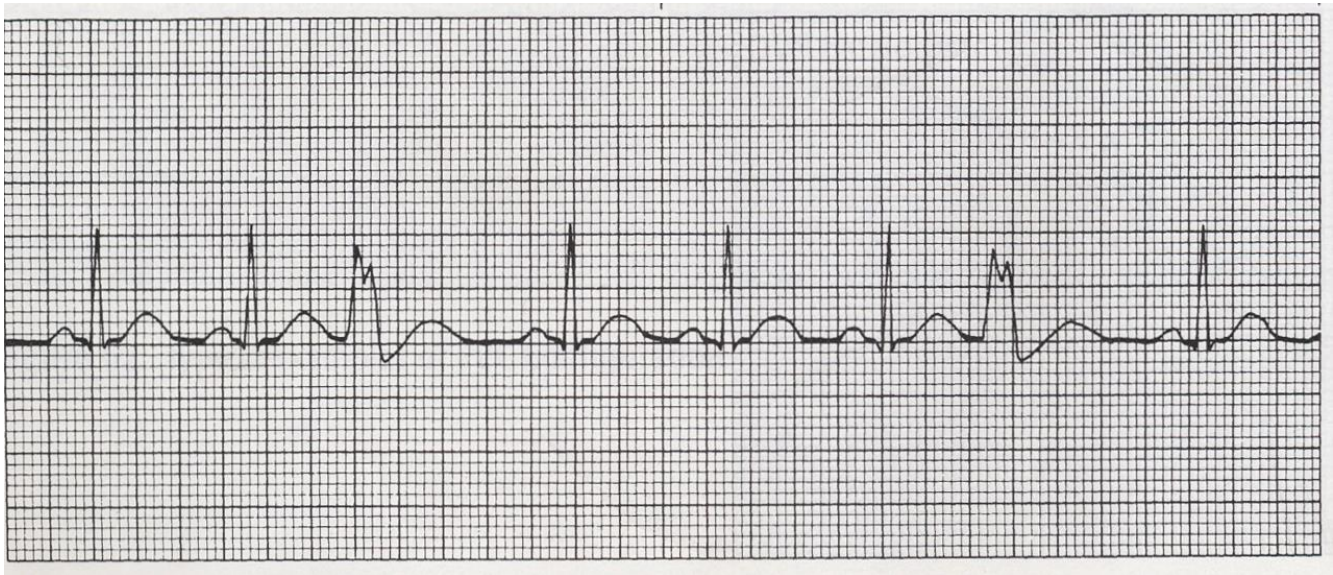
Sinus Bradycardia

- Rate < 60
- Rhythm Regular
- P waves normal
- PR interval < 5 small boxes
- P/QRS and QRS/P
- Narrow QRS < 3 small boxes

PVC's

- Premature Ventricular Complex
- A complex within a rhythm
- Coming from the Ventricles
- Makes rhythm irregular
- Unifocal
- Multifocal

PVC's

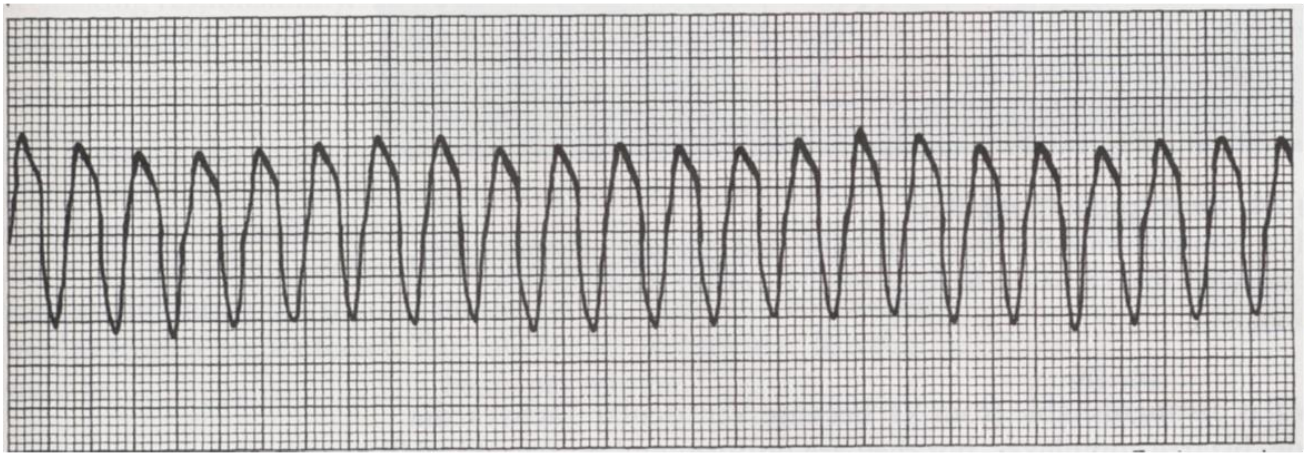


Ventricular Fibrillation

Ventricular Fibrillation

- Rate ?
- Rhythm ?
- No P waves
- No QRS
- NO PULSE

Ventricular Tachycardia



Ventricular Tachycardia

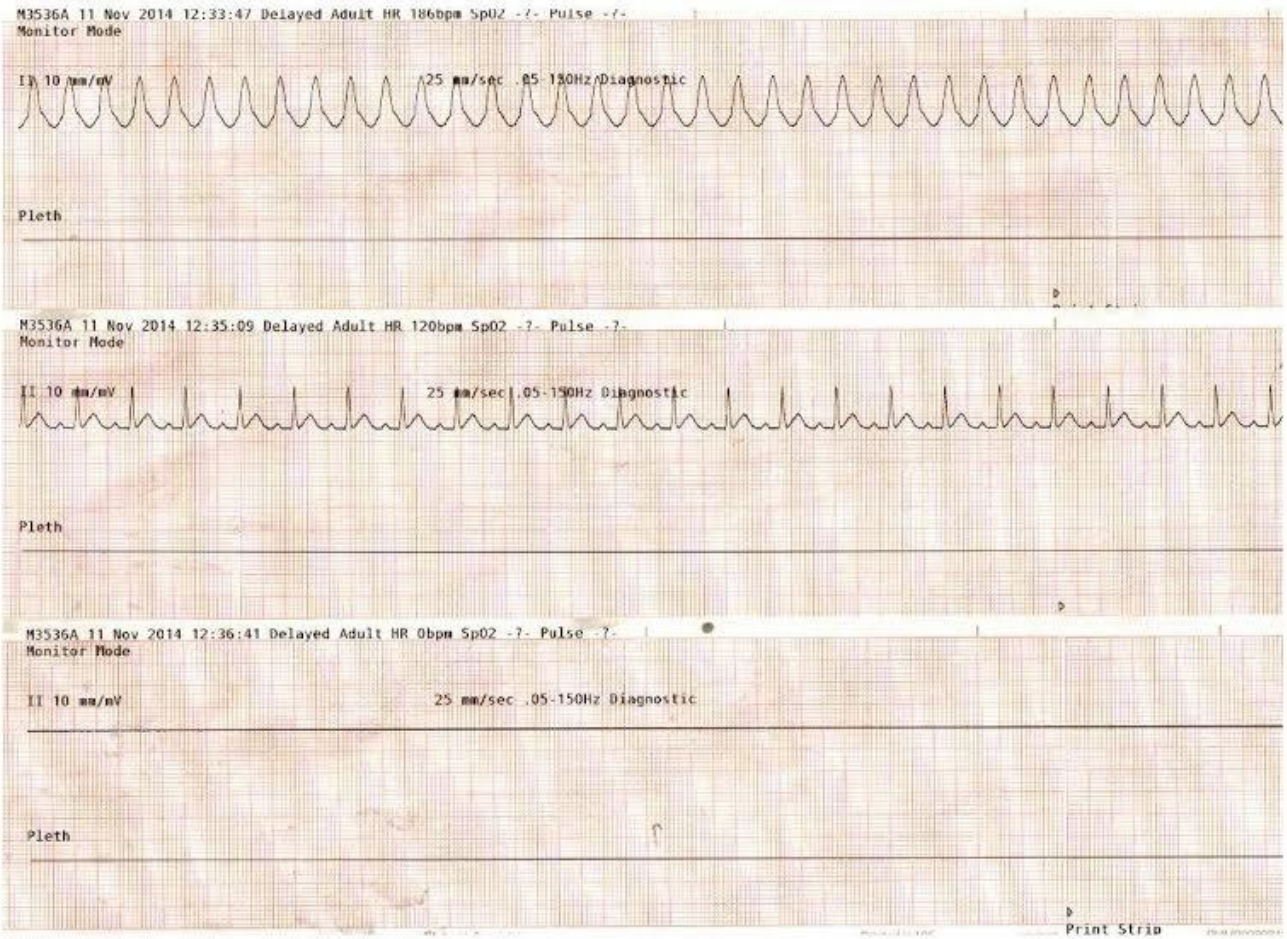
- Rate > 100
- Rhythm Regular
- P absent
- No PR interval
- Wide QRS > 3 small boxes

Asystole

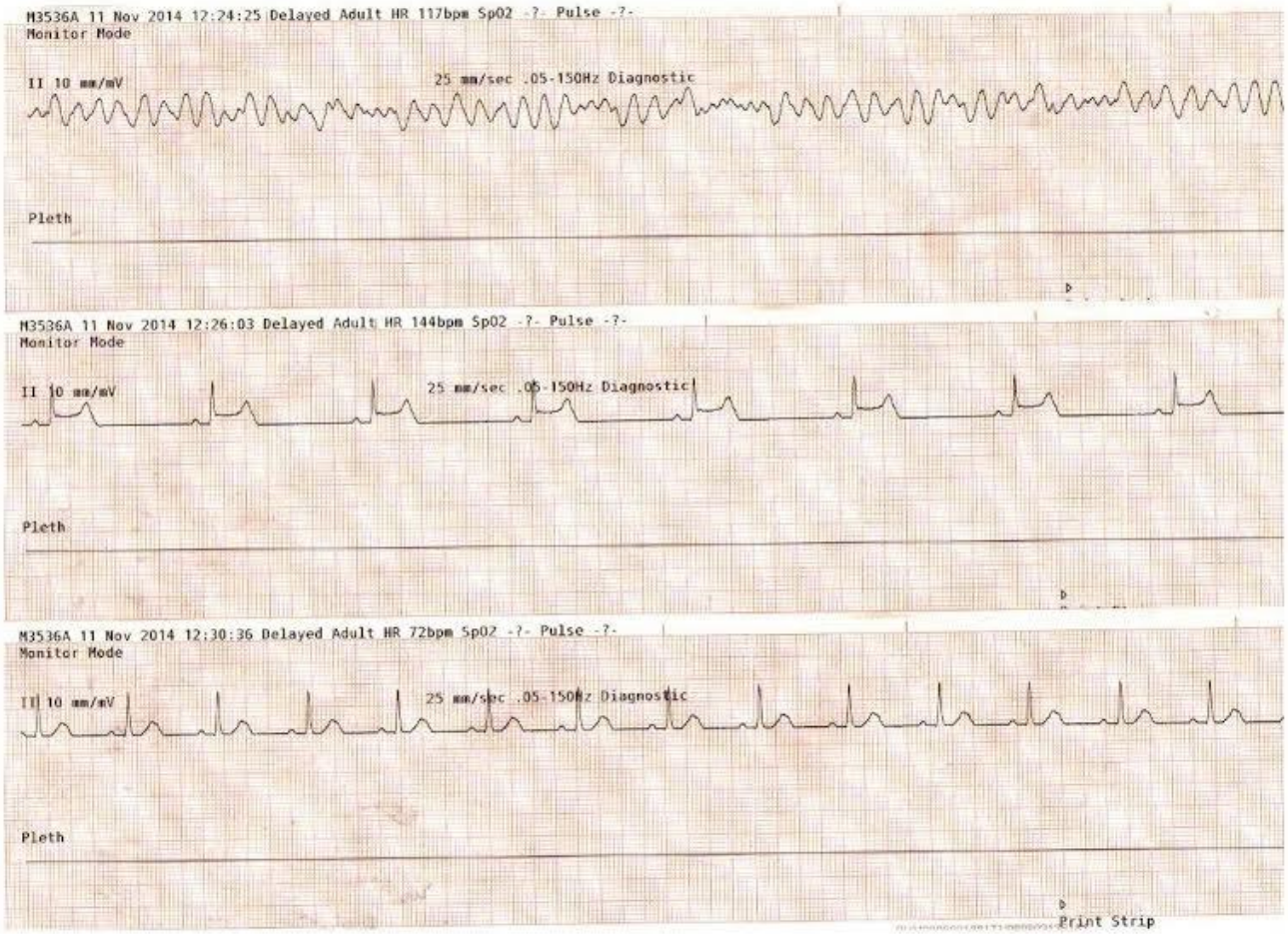
Pulses Electrical Activity

The term PEA refers to an organised cardiac rhythm (other then VT) on the monitor that is not accompanied by a detectable pulse

Name that Rhythm



Name that Rhythm



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Summary

- Remember ECG shows only electrical activity
- Always check vital signs and patients condition
- Use systematic approach
- Fail to prepare, prepare to fail

Wednesday, 07 January 2015