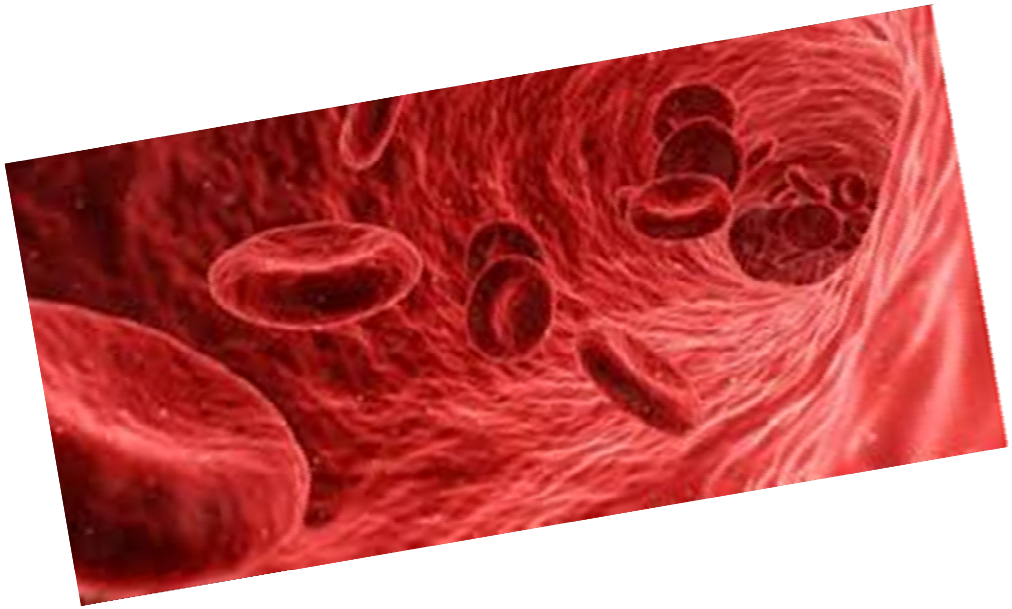
Clinical Notes / Indication for Transfusion:

Dropped Hb ? cause



Helen Bardsley

Austin Health

NICE Oct 12-14th 2018

Austin Health

Clinical presentation

- Male patient 76 yo
- Presented to Emergency department at Austin Health at 0230
- Clinical history – abdominal pain
- Initial FBE results - Haemoglobin 114g/l
- - White cell count 42.6 x 10^9/l
- - Platelet count 219 x 10^9/l

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Biochemistry results at 0230

GENERAL CHEMISTRY (SE	
Sodium	139
Potassium	5.1
Chloride	96L
Bicarbonate	23
Urea	7.5
Creatinine	85
eGFR	76L
Anion Gap	25H
Tot Protein	68
Albumin	42
Globulins	26
Bili Total	103H

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Over the next 4 hours his haemoglobin dropped to 49g/l

	0230	0620
O2 Sat	33L	81L
ELECTROLYTES (Direct ISE)		
Na	136	130L
K	4.5	5.4H
Cl	99	105
Ionised Ca	1.13	1.18
BLOOD CO-OXIMETRY		
Total Hb	114L	49L
Oxy Hb	31.7L	74.1L
Carboxy Hb	2.6H	5.6H
Meth Hb	1.3	3.2H
Reduced Hb	64.4H	17.1H
METABOLITE VALUES		
Glucose	19.6H	12.4H
Lactate	5.0H	17.0H
Creat	74	57

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Group and screen sample sent to Blood Bank

Austin Laboratory
AUSTIN HEALTH (APA)
Studley Road, Heidelberg 3084
Tel: 9496 5230

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REQUEST FOR BLOOD

RIGHT BLOOD RIGHT

Hosp: Austin
Ward:

DATE/TIME REQUIRED | URGENT or Bleeding (Phone Blood Bank) Within 2 hours ☐ NOT Urgent ☐ (Date).....

MEDICARE or DVA (Repat) Number

Clinical Notes / Indication for Transfusion:

Dropped Hb ? cause

Tests Requested:
Group & Screen is valid for 3 days

Group + hold.

Special Product Requirements
(see reverse for ARCBS guidelines) (Tick)

- Irradiation ☐
- CMV negative ☐
- Apheresis platelets ☐

Transfusion History
(*MUST* also be completed for extended expiry)

	Yes	No	Unknown
Transfusion in last 3 months	☐	☐	☐
Previous reaction to blood	☐	☐	☐
Pregnancy/miscarriage in past 3 months	☐	☐	☐

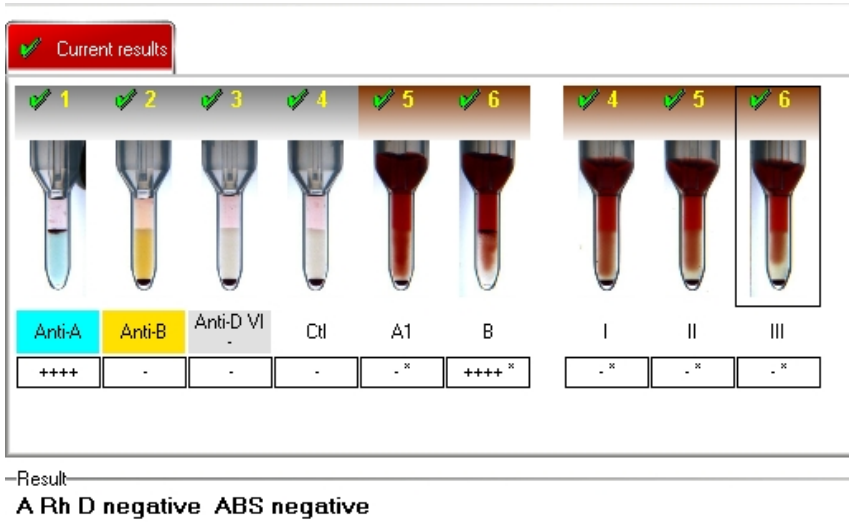
Requesting Doctor (Must Sign & Date)
Doctor code:.....Provider No:.....Pager No:.....

Previous blood group result in computer system

Group and screen results

- Scientist contacted ICU
- Patient is haemolysing
- 'Cherry red haemolysis'

- DAT Negative



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- MTP activated at 0630

- 12 red cells crossmatched
- 8 FFP
- 20 cryoprecipitate
- 2 pooled platelets

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Blood sample at 0930

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Patient blood test results

Routine Coagulation Testing	
PT	23H
INR	2.1
APTT	75H
Fib Clauss	*
Fib Derived	*
D-Dimer	44261H

Fibrinogen <0.8

DIC

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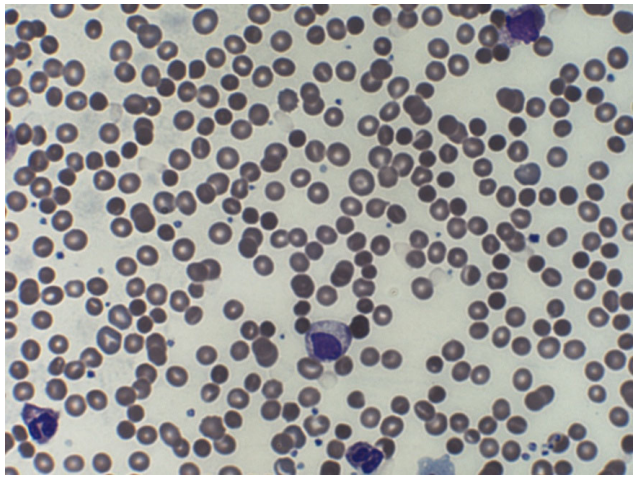
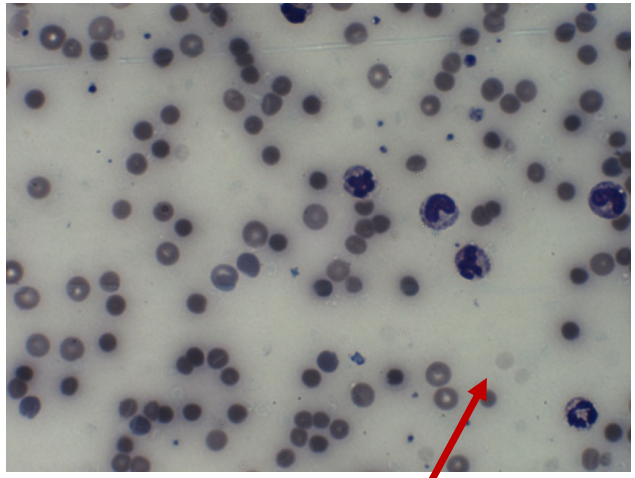
Blood film :

Film shows significant number of spherocytes,
Neutrophils - left shift with toxic changes

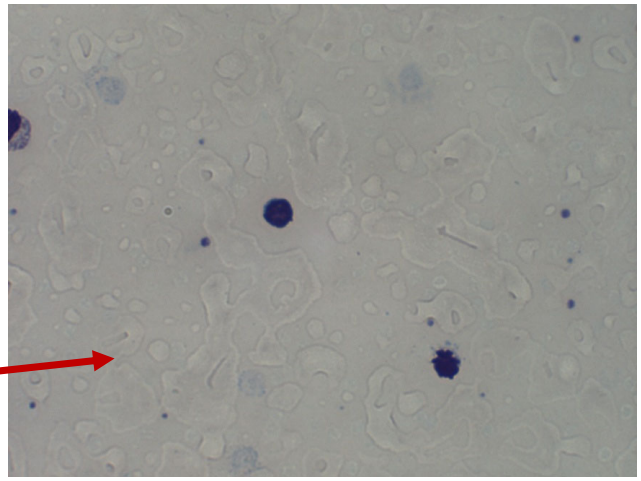
0230



0830



0930



Ghost red cells

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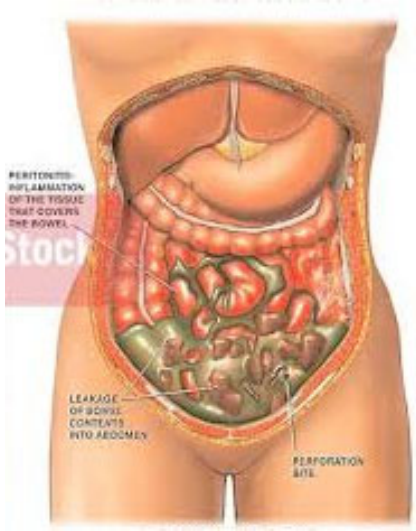
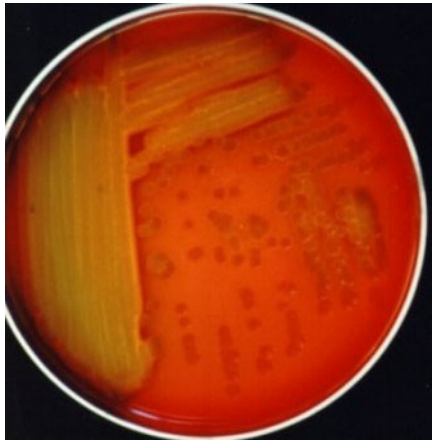
What caused the Hb to drop ?



- Patient had a perforated bowel
- **Clostridium perfringens** was isolated from his blood cultures

- **Patient died at 1123 (approx. 9 hours post admission)**



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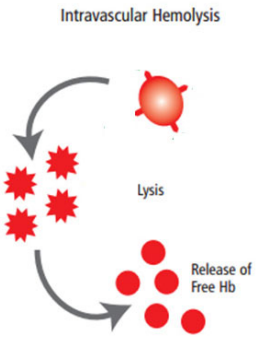
- **Clostridium perfringens** (**C**. **perfringens**) is a gram positive, rod shaped, anaerobic, spore forming bacterium
- Present in nature, found in intestinal tracts of humans, other vertebrates, insects, soil.
- Commonly found on raw meat and poultry
- One of the most common causes of food poisoning
- Infections due to C. perfringens show tissue necrosis, bacteremia and gas gangrene
- The toxin involved in gas gangrene is known as alpha toxin
- It inserts into the plasma membrane of cells, producing gaps in the membrane that disrupt normal cellular function.

What caused the massive intravascular haemolysis?



- Clostridium perfringens produces a primary toxin known as phospolipase c lecithinase (alpha toxin).
- This alpha toxin is responsible for gas gangrene and myonecrosis in infected tissues.
- The toxin also possesses haemolytic properties.
- The alpha toxin splits lecithin in the red cell membrane and causes damage to its structural integrity causing haemolysis.

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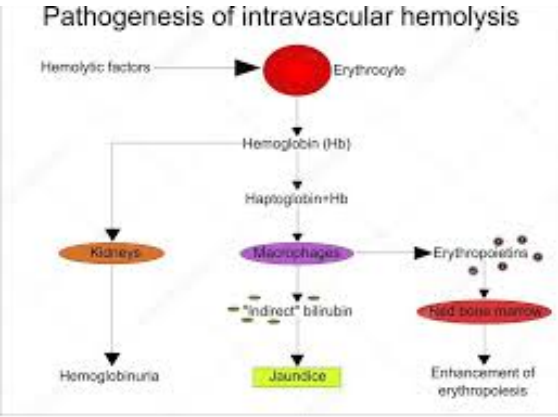
Summary



Intravascular haemolysis is rare

Morality rate is 70% in Clostridium perfringens septicaemia

Key factors to improve the probability of survival from this rapidly fatal disease:

- **Early detection**
- **Prompt antibiotics administration with IV antibiotics**
- **Surgical intervention for source control**

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