



Pre-hospital Emergency Transfusion

Dr Chris Hingston

Consultant Critical Care & Pre-hospital Emergency Medicine

EMRTS Cymru

Emergency Medical Retrieval & Transfer Service

www.emrts.wales.nhs.uk

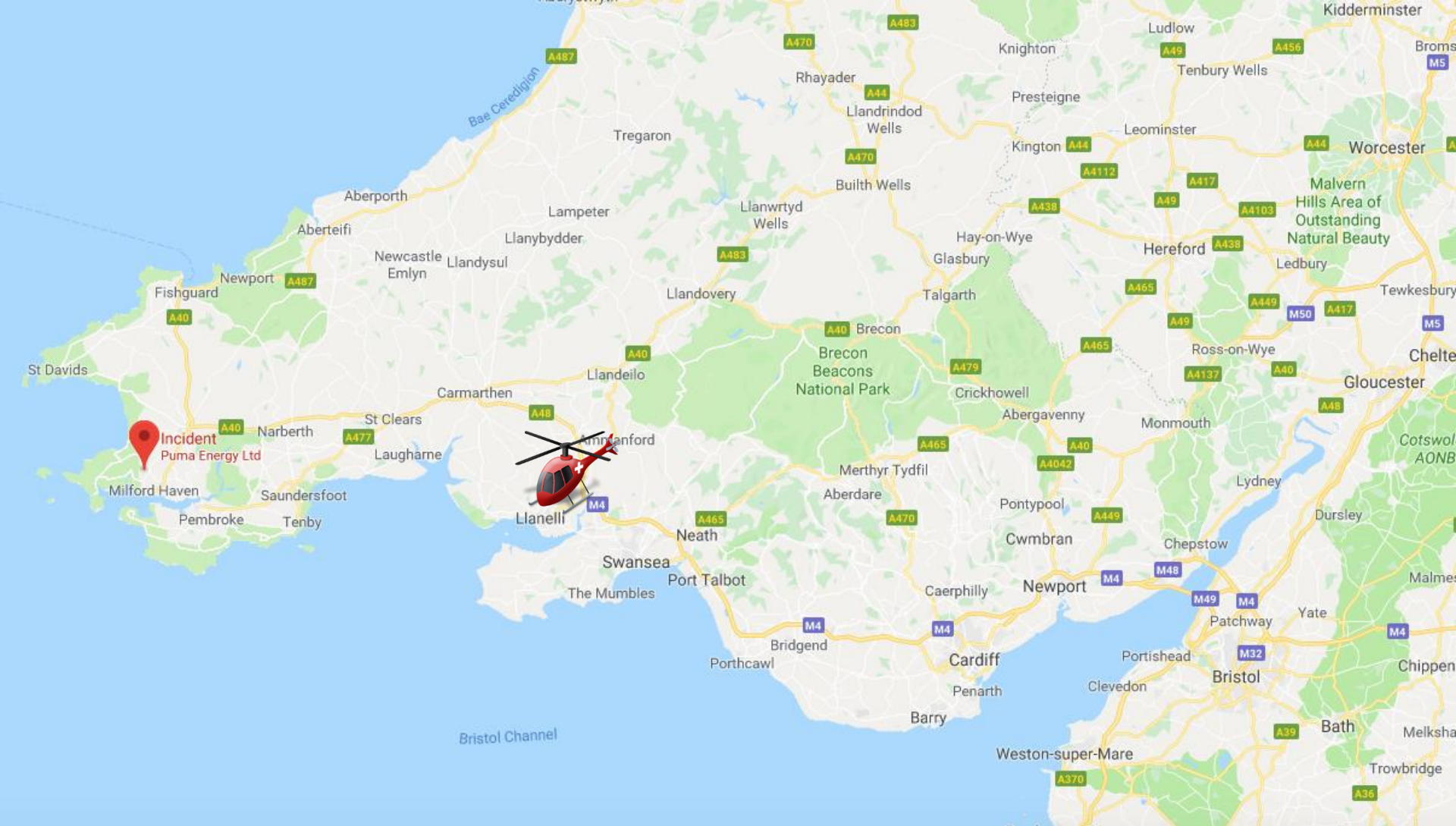
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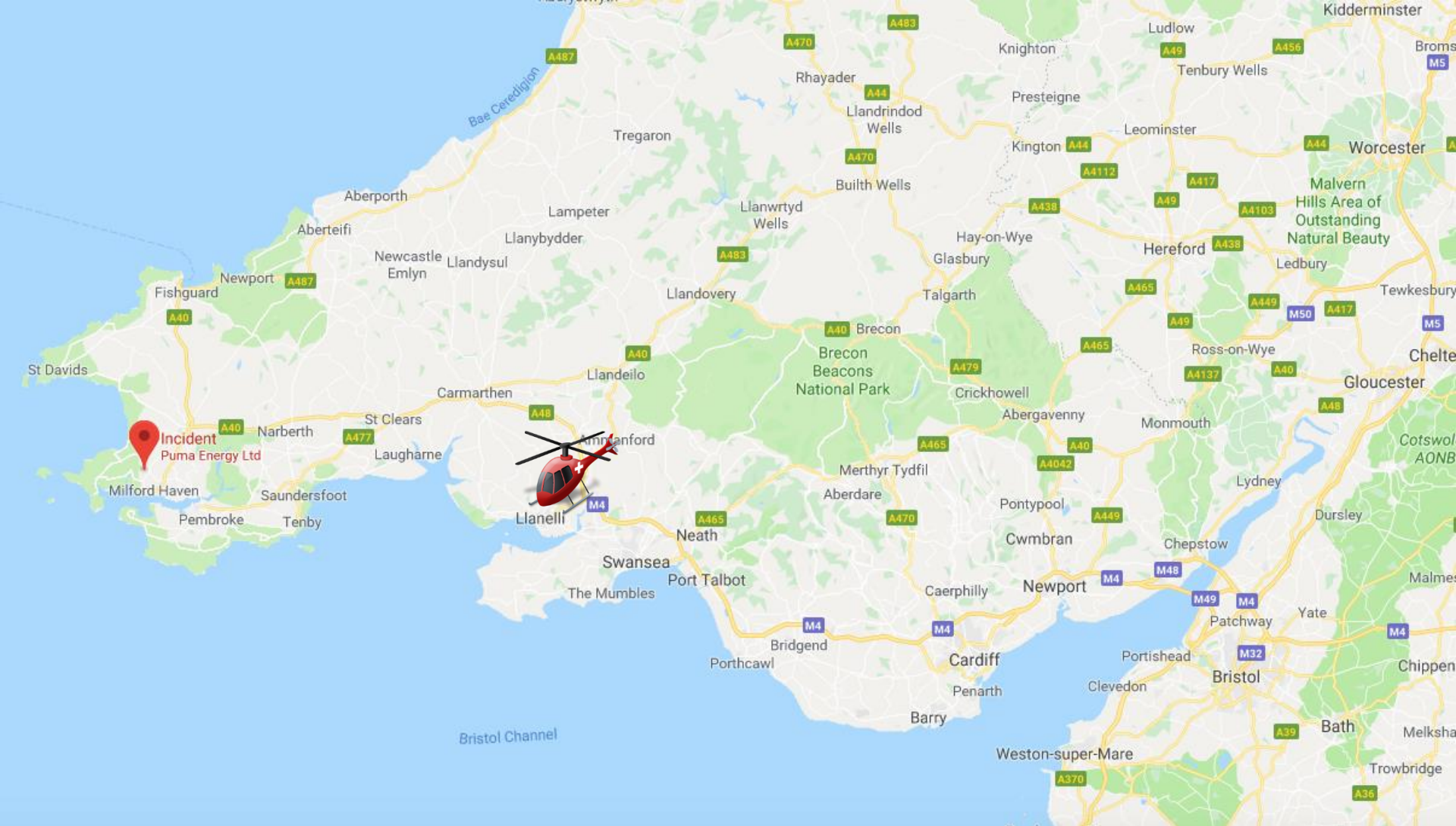


18:35 999 call: Motorcycle RTC

120
mph





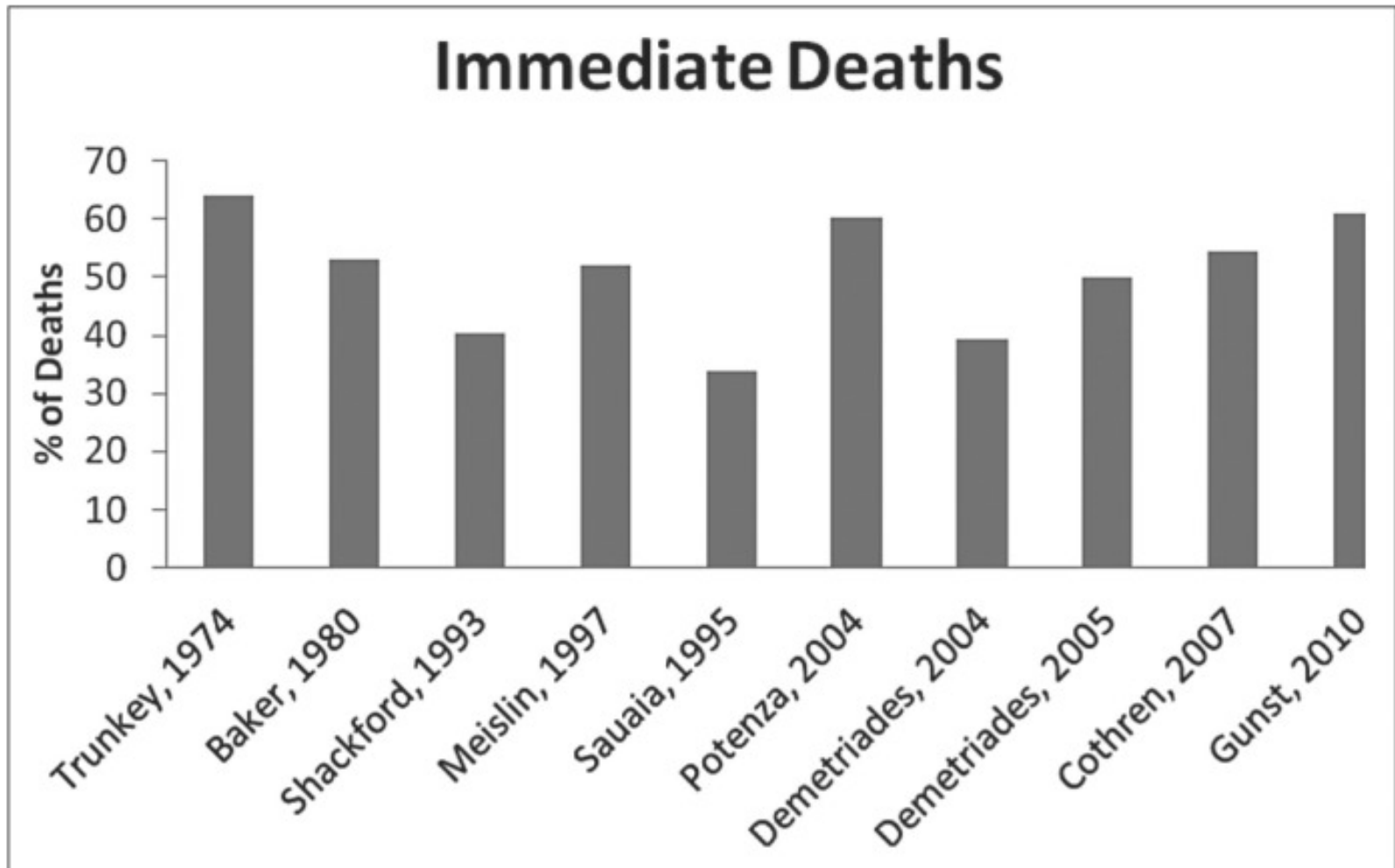


18:35 999 Call: Motorcycle RTC

18:48 Helimed 57 & 59 tasked. UPDATE: 2 patients ?one dead

18:57 First ambulance **19:28** H57 arrived on scene

Trauma Deaths





50%
fatalities
at scene

First ambulance:
minutes

22

Arrival of first
Critical Care Team:

53 minutes

Primary Survey

Male, in his 30's

<C> No catastrophic haemorrhage

A Blood +++

B Surgical emphysema left chest. SpO₂
76%

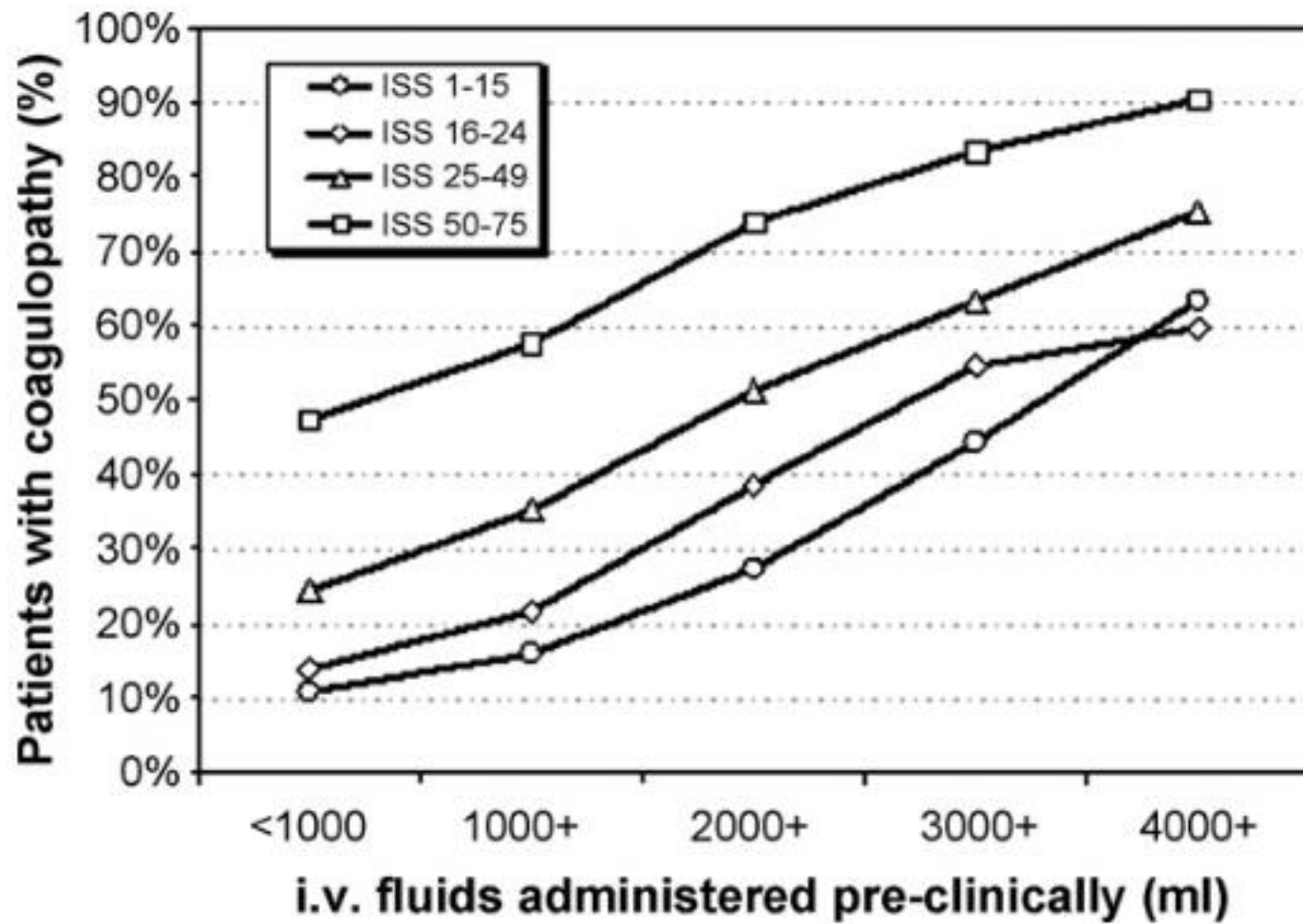
C BP 92/46, Pulse 142

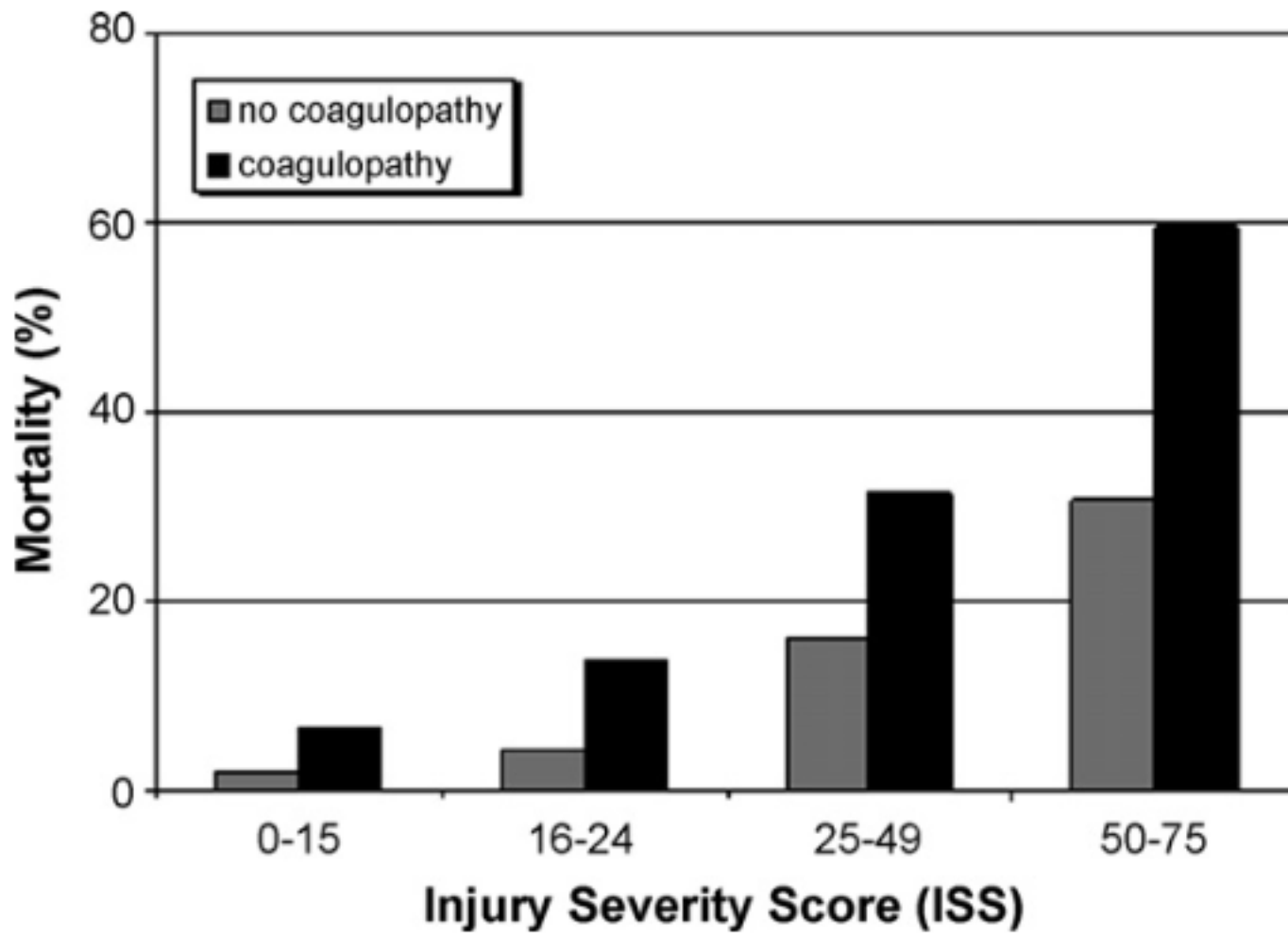
D Agitated, police holding him down

E Abdominal puncture wound

Left femoral & right humerus fracture

?pelvis







Scene to Withybush Hospital: 15 minutes

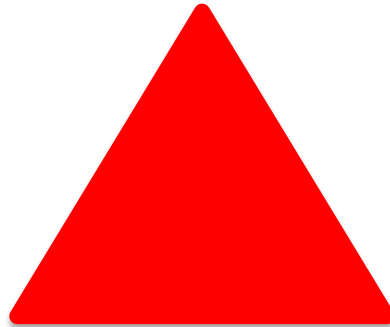
Time in hospital: 2 hours

Withybush Hospital to Cardiff: 2 hours



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Raise £8m per annum
Provide 4 aircraft and bases



Llywodraeth Cymru
Welsh Government

£2.5m per annum



Consultants & CCPs
Governance Structure

Service Provision

08:00 – 20:00 Daily
(24/7 from 1st April 2020)

Clinical service model:

- Pre-hospital critical care (all age groups)
- Time critical adult/paediatric retrieval
- Maternal/neonatal care
- Major incident response

Supported by:

- Air Support Desk
- Top Cover Consultant



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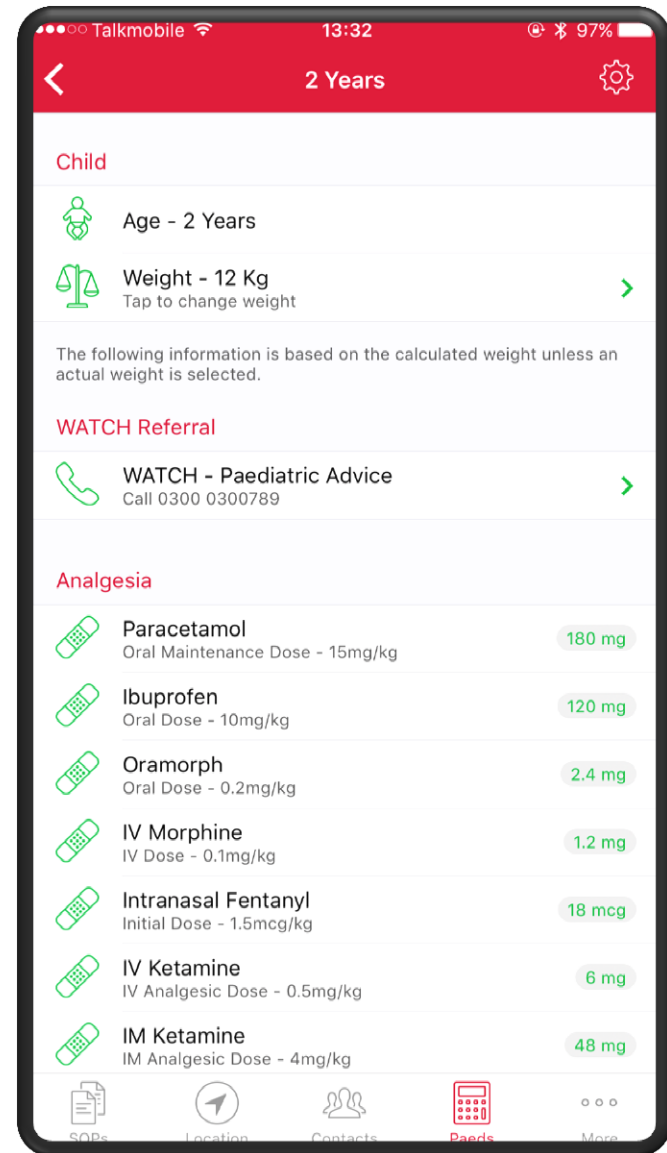
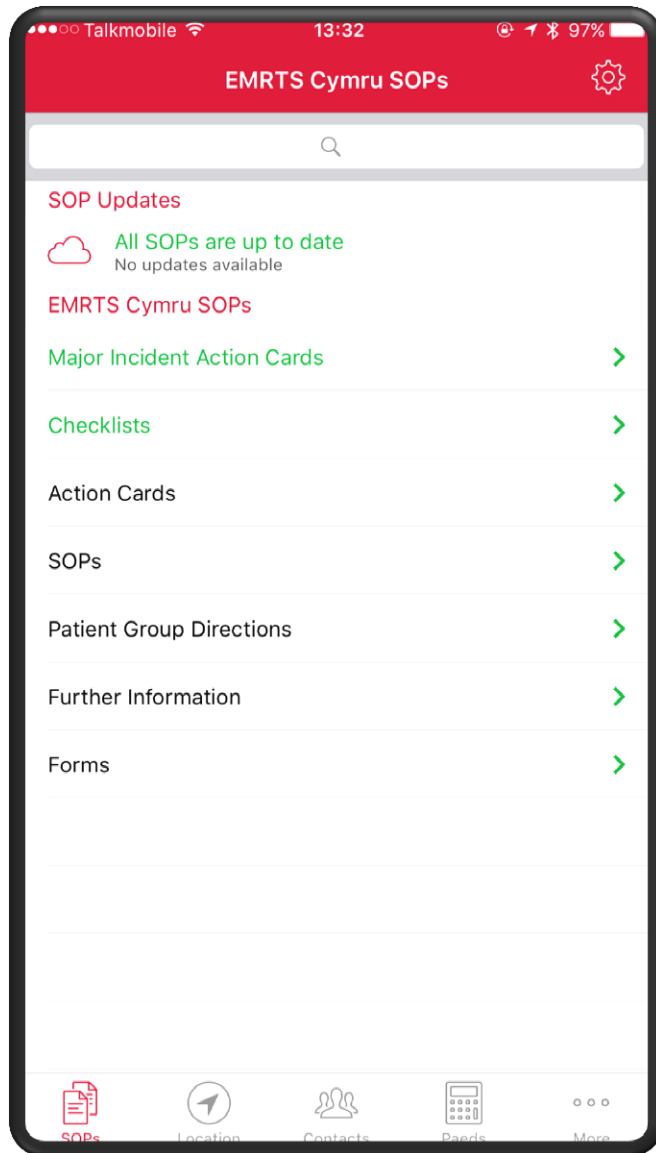


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Point of Care Testing

Arterial blood gas

Haemoglobin

Electrolytes

Creatinine

Lactate

INR



**O -ve blood
4 units**



**Lyophilised plasma
'LyoPlas' 4 units**



**Fibrinogen 4g
PCC 'Beriplex' 3000iu**



Motorcyclist

- Pelvic binder placed and limbs splinted
- Intubated at scene
- Bilateral finger thoracostomies
- Washout leg and antibiotics
- PRBC x4, Lyoplas x4, Fibrinogen x4g (warmed)
- Blood gases checked en route
- Arrived at Major Trauma Centre: **21:15h**

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Code Red

Governance

- Welsh Blood Service, Blood Banks and Health Board
- Testing of all EMRTS personnel
- Bi-monthly blood group teleconference & audit

Standard Operating Procedures

- CSOP019 Blood product administration
- OSOP055 Handling and use of blood products
- National guidelines

Same standards as those demanded in-hospital

EMRTS BLOOD AND BLOOD PRODUCT CHECKLIST	
TICK	DAILY BASE ROUTINE
	Ensure 2 documentation packs placed with Golden Hour Boxes
	Both Golden Hour Boxes to be stowed in aircraft (OR car if aircraft offline)
	Lyoplas, Fibrinogen and PCC removed from fridge into retrieval bag – stow in aircraft (OR car if aircraft offline) – check seals on bags
TICK	ADMINISTRATION (if clinically indicated)
	Apply 2 wristbands to patient (1 to wrist, 1 to ankle)
	Obtain pre-transfusion blood sample where possible
	Label G&S bottle by hand against info on wristband (Apply hand-written sticker to paediatric G&S bottle – no pre-labelling)
	Place G&S bottle in transfusion request form and complete details – mark form
	Prescribe blood on All Wales Transfusion Chart (Doctors only)
	Open Golden Hour Box when blood is required
	At least one person visually check unit (colour, clot, leaks), check blood feels cold, confirm O-ve and check expiry date
	Administer blood as clinically indicated through warmer and blood giving set, repeat as required, 1:1 Blood to Lyoplas, target – presence of a radial pulse
	Don't forget TXA 1g and calcium (as indicated)
TICK	FURTHER ACTIONS
	Complete both portions of blood labels – tear off blue portion and place in Golden Hour Box to return to blood bank, white portion stays on unit
	Remove sticker from blood label and place on All Wales Transfusion Chart
	Pre-alert patient activate receiving unit massive haemorrhage policy (only if
	Early contact with blood bank (BB) to activate Operation Vampire: Morriston Hospital BB - 01792 703034 Wrexham Maelor Hospital BB - 01978 725371, OOH contact 07783 434307
TICK	AT RECEIVING HOSPITAL
	State pre-hospital transfusion has taken place and ensure wristbands still on
	Handover G&S, request form and All Wales Transfusion Chart to team leader – NOT all
	Hospitals will accept patient identifiers and process sample. If they use their own identifiers ensure details are taken on EMRTS PCR. Copy EMRTS PCR. Inform receiving hospital whether patient is aware of transfusion. Do not leave any unused grouping sample taken. Do not leave any unused sample in the receiving hospital.
	Copy of the All Wales Transfusion Chart
TICK	AT BASE
	Fully complete batch product sheet with as much detail as possible
	Place batch record sheet and blue portion of blood label in Golden Hour Box for return, complete database and audit form
	Attach copy of All Wales Transfusion Chart to PCR
	Same process for Lyoplas, Fibrinogen and PCC – see separate chart

Administration

Male ☐ Female ☐
 Child ☐ Young adult ☐
 Middle aged ☐ Elderly ☐
DO NOT REMOVE FOR 24HR

N9005001 01.01.1901 I
 EMRTSAAA Swan
 7971 Swan Street
 Swan

7799 3G7 Invalid NHS

EVENTS

EMRTS Cymru Clinical Governance Days

Our Clinical Governance Day (CGD) takes place once-a-month and is open to eligible professionals and students from an emergency healthcare setting. It is a key part of delivering on our [aim of Clinical and Skills Sustainability](#).

A CGD covers case reviews, reflective learning, clinical updates on best practice and journal reviews.

There are also presentations from invited guest speakers who share their expertise on topics of interest, both clinical and operational.

To attend a CGD you must first register your details. To complete your registration, we need evidence that you are in a role requiring GMC/NMC/HCPC registration, or a university student from a recognised emergency healthcare course (i.e. medicine, nursing, paramedicine).

Please read the [CGD Engagement Guidance](#) before registering.

To register, please complete [this form](#) and email to emrts@wales.nhs.uk. If successful, you will be added to our CGD database and receive invitations to future events.

Events

Search			
Date	Time	Location	Theme
26/06/17	9am - 4pm	Dafen Base (Llanelli) and Video Conference	Surgical Skills

PRODUCT USED	Year 1	Year 2	Year 3	Year 4	TOTAL
No. patients	47	57	40	75	219
Packed Red Blood Cells	96	101	73	134	404
‘LyoPlas’	82	86	71	117	356
Fibrinogen Concentrate	7g	6g	7g	30g	50g
Prothrombin Complex Concentrate	5 patients	2 patients	6 patients	6 patients	19

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INDICATION	Year 1	Year 2	Year 3	Year 4	Total
Traumatic cardiac arrest (Penetrating)	1	1	1	0	3
Traumatic cardiac arrest (Blunt)	15	11	14	17	40
Critical hypovolaemia (Penetrating)	3	4	1	5	8
Critical hypovolaemia (Blunt)	22	32	16	44	70
GI bleed/medical	1	7	3	3	11
Anticoagulation reversal	5	2	4	6	11

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Wastage KPI: 0%

	Year 1	Year 2	Year 3	Year 4	Total
Packed red blood cells	7 units (0.6%)	10 units (0.8%)	3 units (0.2%)	3units (0.16%)	23 (0.4%)*
'LyoPlas'	2.5 bottles	2	0	2	6.5
Fibrinogen Concentrate	1 bottle	0	0	0	1
Prothrombin Complex Concentrate	500 iu	0	2500iu	0	3000iu

* Literature benchmark 1.9%

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KPI	Target	Year 1	Year 2	Year 3	Year 4	Total
Wastage	0%	0.6%	0.8%	0.2%	0.16%	0.4%
Appropriate usage	100%	98%	98%	98%	100%	98.5%
Warmer used	100%	96%	79%	100%	100%	94%
Paperwork	100%	100%	99%	100%	100%	99%
Traceability	100%	100%	99%	100%	100%	99.75%
TXA (where applicable)	100%	100%	90%	97%	98%	96%
Pre-transfusion sample	100%	13%	41%	30%	32%	28%

The NEW ENGLAND JOURNAL of MEDICINE

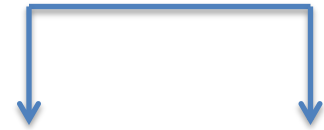
ESTABLISHED IN 1812

JULY 26, 2018

VOL. 379 NO. 4

Prehospital Plasma during Air Medical Transport in Trauma Patients at Risk for Hemorrhagic Shock

J.L. Sperry, F.X. Guyette, J.B. Brown, M.H. Yazer, D.J. Triulzi, B.J. Early-Young, P.W. Adams, B.J. Daley, R.S. Miller, B.G. Harbrecht, J.A. Claridge, H.A. Phelan, W.R. Witham, A.T. Putnam, T.M. Duane, L.H. Alarcon, C.W. Callaway, B.S. Zuckerbraun, M.D. Neal, M.R. Rosengart, R.M. Forsythe, T.R. Billiar, D.M. Yealy, A.B. Peitzman, and M.S. Zenati, for the PAMPer Study Group*



Standard
d
n=271

Plasma
a
n=230

Standard Group: Crystalloid or PRBC (13/27 bases)

Plasma Group: 2 units thawed FFP as first line therapy

Primary outcome: 30 day mortality

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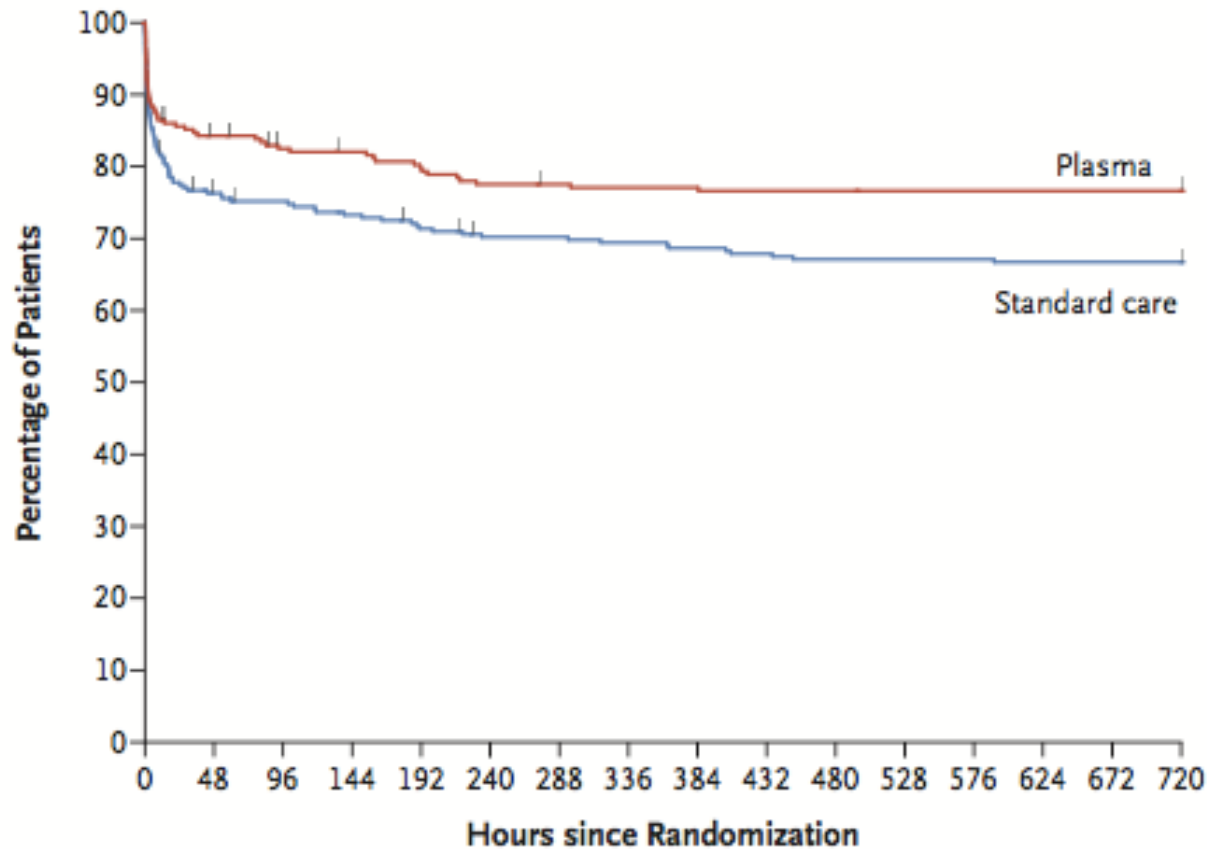


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Survival



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CODE RED: MASS CASUALTY

ACTIONS: EMRTS Top Cover Consultant			
TASK	DESCRIPTION	✓	TIME
1	If it is clear that a major incident will result in protracted on-scene times and the likelihood of exsanguination, declare Operation Lycan.		
Out of hours, you may have to perform the ASD actions yourself.			
2	Decide, with the ASD and operational teams, where the blood needs to go.		
3	Confirm that Op Lycan is complete.		

ACTIONS: EMRTS AIR SUPPORT DESK			
TASK	DESCRIPTION	✓	TIME
1	On declaration of Operation Lycan (by Top Cover), task an aircraft to Royal Glamorgan Helipad to collect blood. This aircraft can be WAA, police, or SAR.		
2	Phone Welsh Blood Transfusion Service on 01443 622000 and say "This Is the EMRTS Air Support Desk. I wish to declare OP LYCAN". Give an ETA for the aircraft. Confirm receipt of message. NB: remember that this is NOT op Vampire, and is in a different location.		
3	Ensure transport from Helipad to Welsh Blood Service reception has been arranged.		
4	Decide, with Top Cover Consultant and EMRTS personnel on scene, where the blood is to go. In a multisite incident you may need to divide the blood between locations.		
5	Inform aircraft of its next destination, as decided above.		
6	Note time that blood loaded onto aircraft.		

PRBC: 20 units O+ve and 10 units O-ve

Lyoplas: 30 units

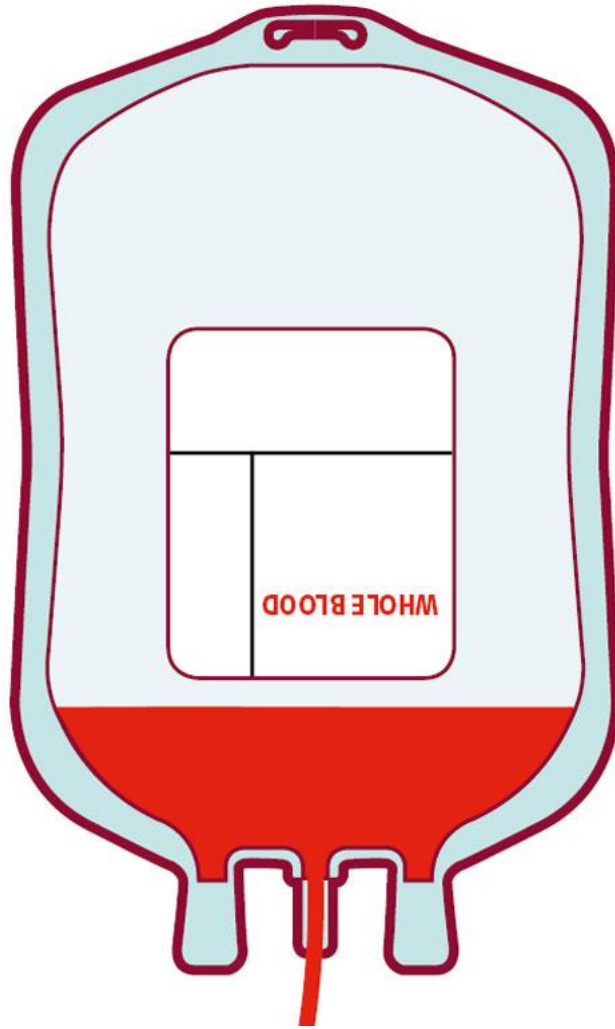
Operation Lycan

Live Exercise July 2017



 National Ambulance Resilience Unit NARU  				
Contact Details	Action Taken / Decision	Time	Initial	Reviewed / Completed
11:59	TCC J.W. OP LYCAN	12:02	T.A	12:05
12	OP LYCAN WBS OK			12:06
	H67 INTOLMS 12:25 ETA		B.S	12:05
01443	RGHP sent to intolms H67			12:09
443132	Arrive ETA			
	RGHP WBS 12:15			12:15
	12:15 H67 LITEN 12:35			12:19
	RGHP ETA 12:35			12:21
	PASSED TO WBS			
	H67 STRUGGLING WEATHER			12:27
	ISSUES BOUND TO NASH			
	TCC INTOLMS H67			12:29
	STRUGGLING WEATHER			
	H67 ETA 12:35			12:32
	RGHP H67 O/S			12:37
	CHLIS HINGSON			12:43
	END TX			





We urgently need you.
Blood stocks are low.

**O+ve
Blood**

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Challenges

- Double CCP crews administering blood products
- Pre-transfusion sample and acceptance
- Blood warming device failures
- Continuing to ensure KPI compliance
- 'Lyoplas' supply chain issues

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**ACKNOWLEDGMENT OF THE HARD WORK AND
DEDICATION OF STAFF AT:**

**Morrison Hospital, Swansea
Wrexham Maelor Hospital, Wrexham
Ysbyty Gwynedd Hospital, Bangor
University Hospital of Wales, Cardiff**

STRONG SUPPORT OF THE WELSH BLOOD SERVICE

Thank you!

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