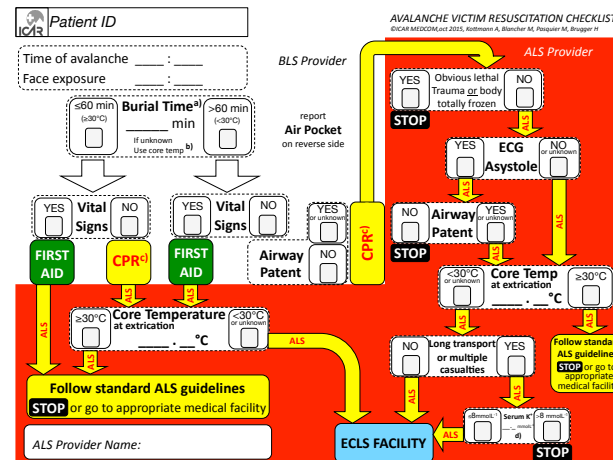


Hypothermia 4 ways & What can we do to save more lives?





Dr Malin Zachau

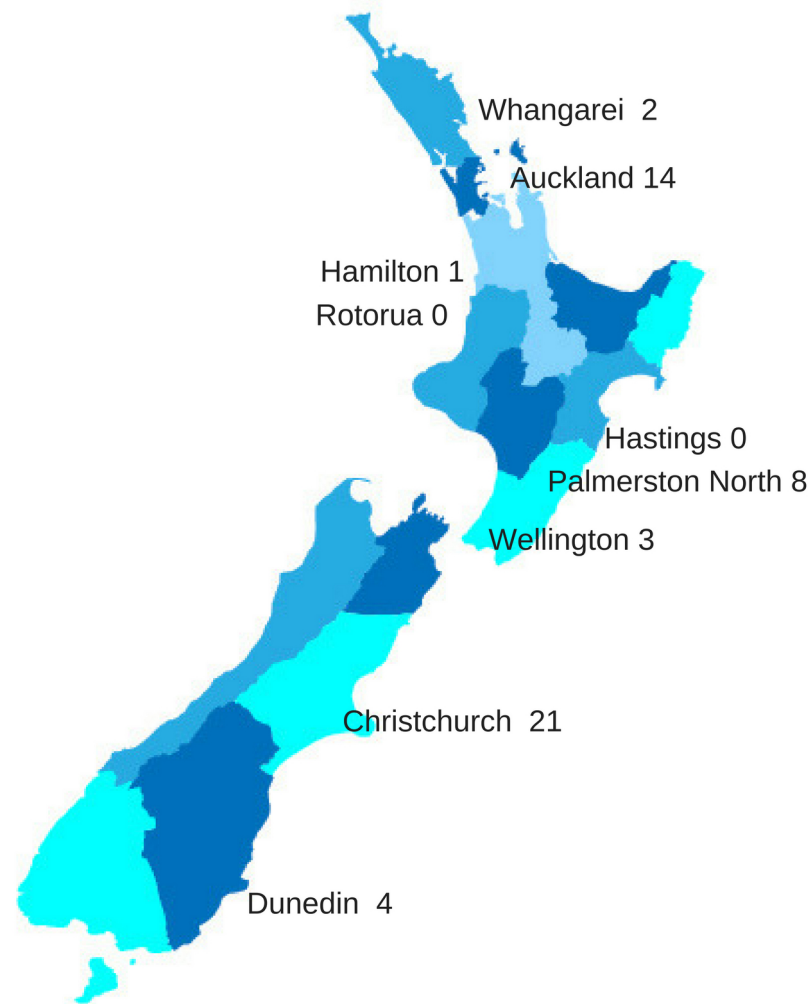
MB,BS; DRCOG,DipIMC
(retired)

Conflict of interest :

I love snow & cold weather

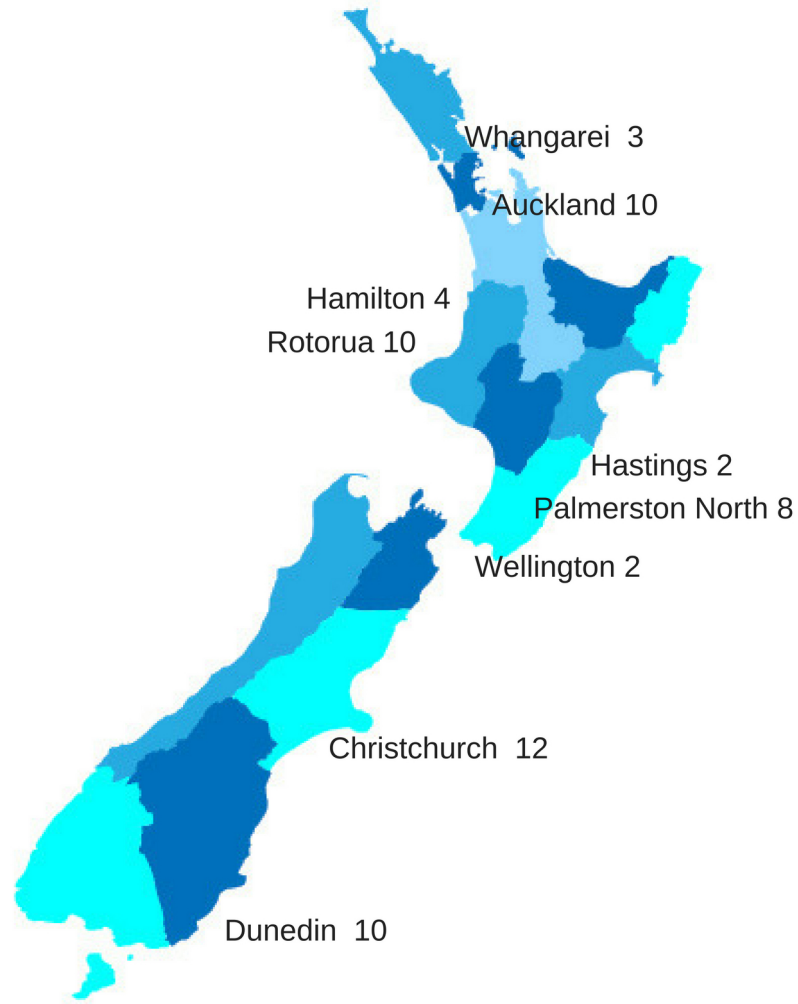
 [DrM@WildernessEMC](https://twitter.com/DrM@WildernessEMC)

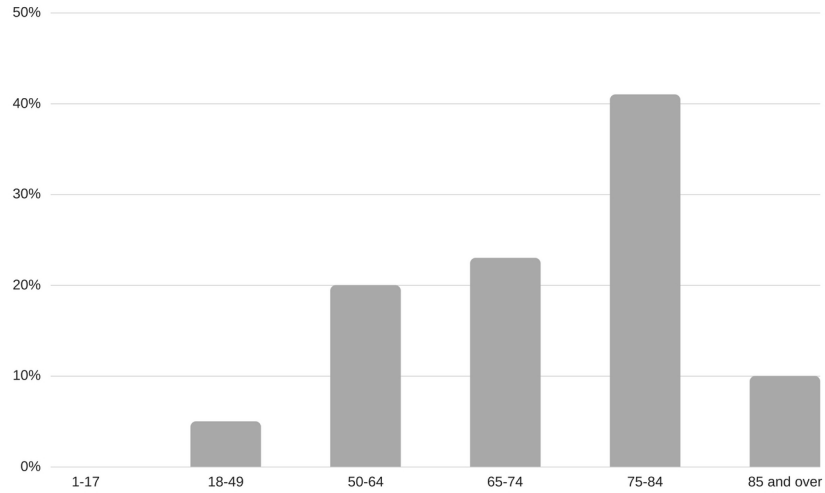
Geographical distribution by Coronial districts: Accidental Hypothermia Indoor fatalities 2007 - 2016



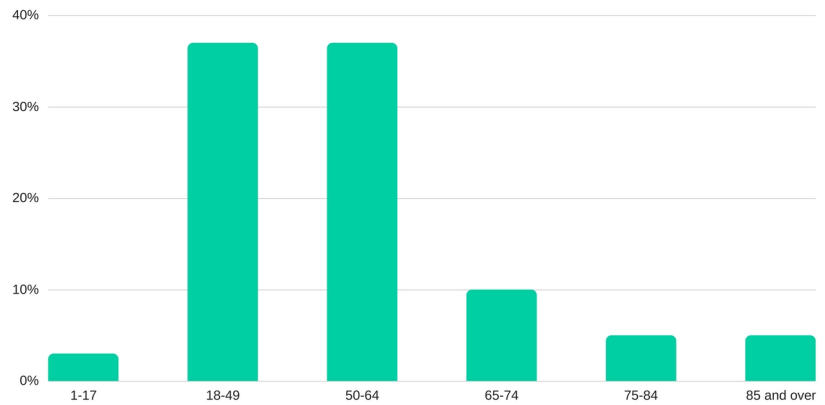
3 cases have no geographical locator

**Geographical distribution by Coronial districts:
Accidental Hypothermia Outdoor fatalities
2007 - 2016**



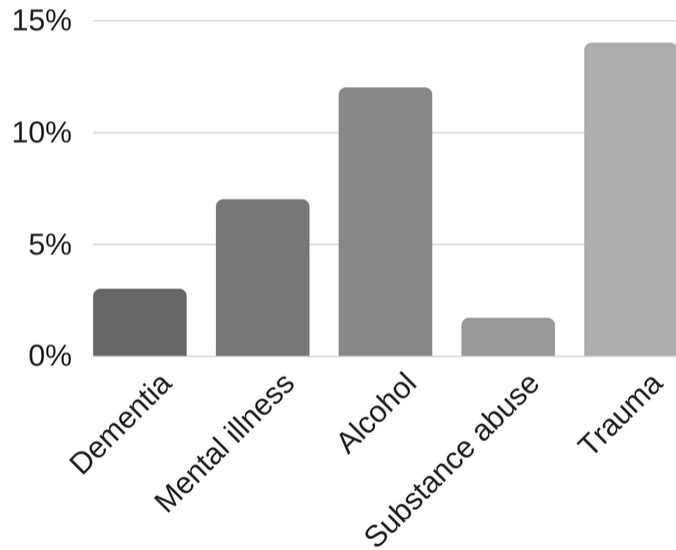


Age distribution (%) of indoor decedents

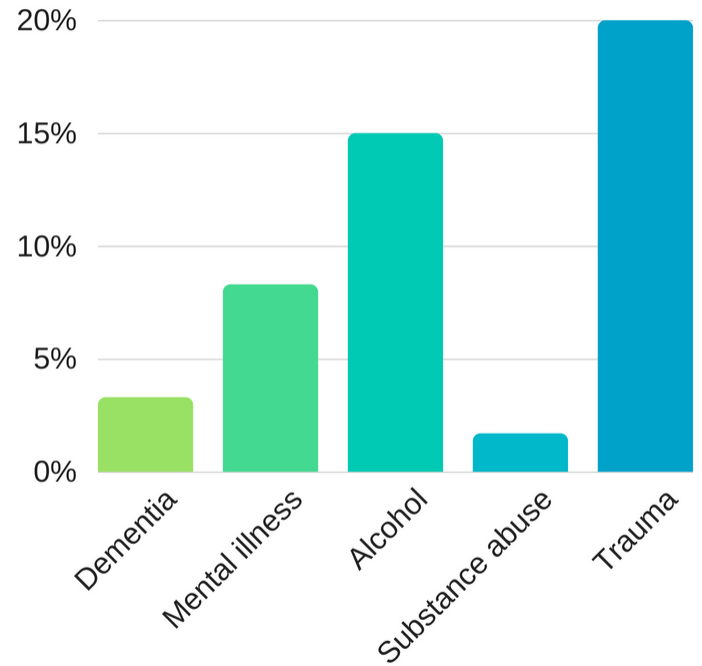


Age distribution (%) of outdoor decedents

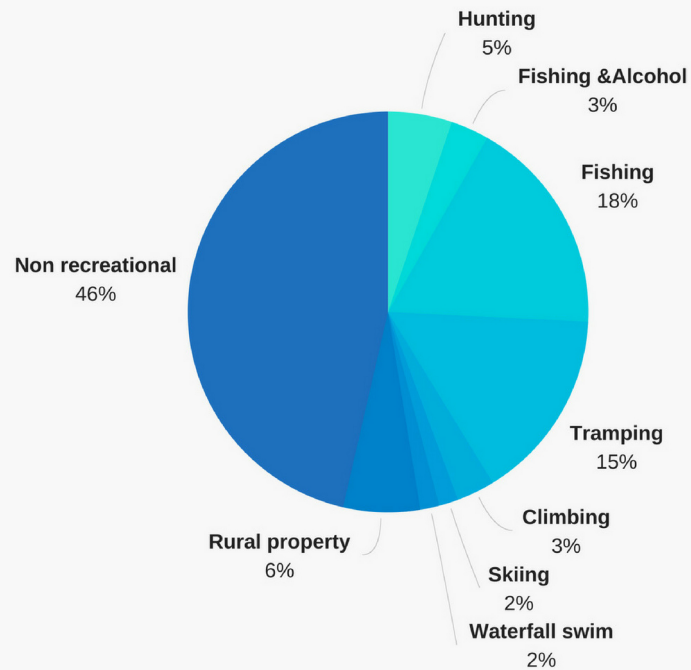
Comorbidities Indoor Decedents



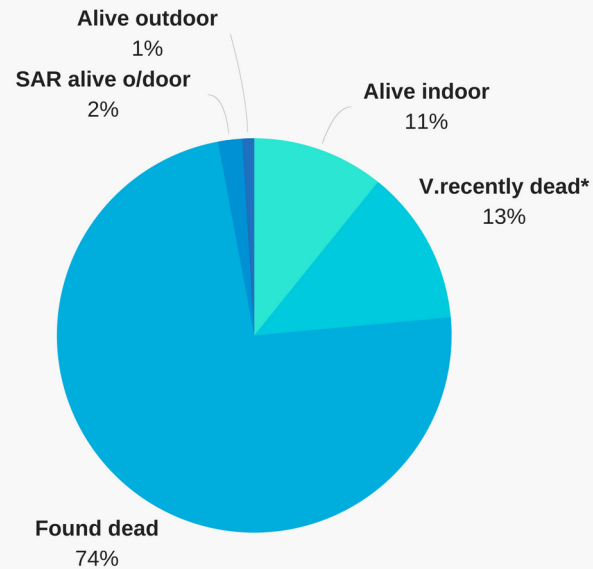
Comorbidities Outdoor Decedents



Outdoor activities at time of death from Accidental Hypothermia in New Zealand



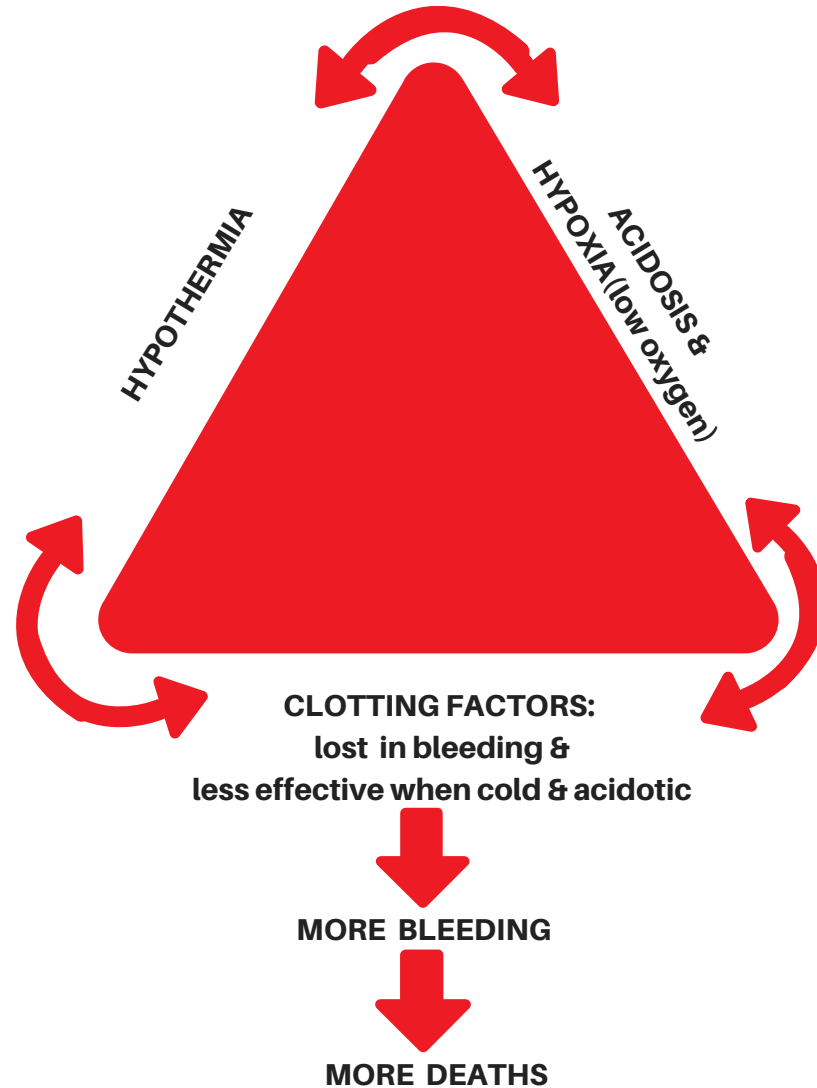
Timing of fatalities in Accidental Hypothermia



* "very recently" estimated as less than hour to a couple of hours,
presenting cardiac rhythm not available

Hypothetically, some of these 26% of patients might potentially be saved with more proactive management

The Lethal Triad = Bloody Vicious Circle



(30 % more fatalities at body temp 35C compared to 37C in trauma)

Trauma coagulopathy & increased mortality

- 28°C is the ambient temperature in which an unclothed normothermic (*uninjured*) human will neither gain nor lose heat ¹
- Trauma patients in tropical environments also become hypothermic⁴

Mortality rate in trauma patients with core temperatures ² (1987)

- **Less than 34°C - 40% mortality**
- **Less than 33°C – 69% mortality rate**
- **Less than 32°C – 100% mortality rate**

For severe trauma patients hypothermia is an independent risk factor for bleeds and mortality³

- Ambient temperature IV fluids will cause hypothermia in trauma patients

Q: Volume of 42°C fluid to rewarm a hypothermic patient?

In 2004 US combat casualties in Iraq presenting to surgical support hospitals:⁵

hypothermic casualty survival	75%
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normothermic casualty survival	98%
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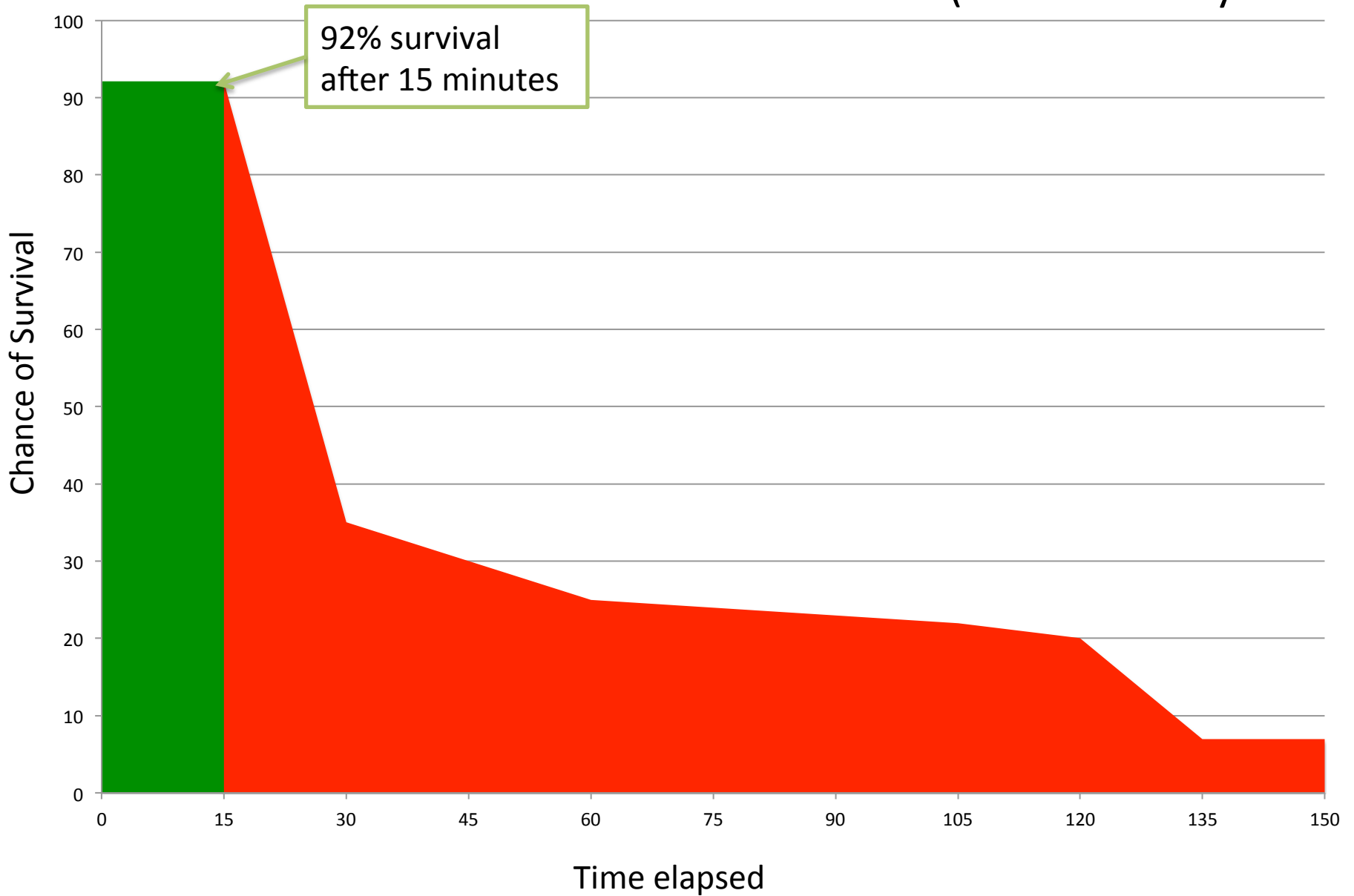
US Committee of Tactical Combat Casualty Care introduced **the “Hypothermia Prevention Management Kit”** in its’ current version in 2010.

Use of that **in conjunction with IV fluid warmers** has reduced rates hypothermia in casualties arriving at Military Medical Treatment Facilities

from 7 % to < 1%

Avalanche rescue is time critical

(if not killed by trauma)





- ICAR avalanche resuscitation checklist
- European & Polish OHCA survival rates
- HOPE score
- Chain of rescue: Every link needs to be strong, agile & evidence based



Survivors?

Potential additional
lives saved?

What can we do to save more lives?

- Evolution
- Education
- Equipment
- Emergency Care Coordination