Short- and Long-Term Survival Following In-Hospital Cardiac Arrest in a Regional Hospital

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Conflicts of Interest

• Nil
Survival

ROSC  Discharge  1 Year Post
Survival

ROSC

46%
Survival

ROSC
46%

Discharge
1 Year Post
25%
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What type of hospitals?

Regional Australia

1 in 4 Australians live here\(^2\)

Lower Life Expectancy\(^3\)

Higher rates of CVD\(^3\)

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Survival to 1 Year & Beyond
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Survival to 1 Year & Beyond

Success of cardiopulmonary resuscitation after heart attack in hospital and outside hospital

*BMJ* 1995; 311 doi: https://doi.org/10.1136/bmj.311.7016.1332 (Published 18 November 1995)

Cardiopulmonary arrest and mortality trends, and their association with rapid response system expansion

Jack Chen, Lixin Ou, Kenneth M Hillman, Arthas Flaboursis, Rinaldo Bellomo, Stephanie J Hollis and Hassan Assareh


Published online: 28 July 2014
Objectives

• For a regional Australian hospital what is the:
  1. Rate of ROSC following an IHCA?
  2. Rate of survival to discharge following an IHCA?
  3. Long-term survival following an IHCA?
  4. Where are patients discharged to following their IHCA?
### Hospital Cardiac Arrest Database

**Inclusion Criteria:**
- Age $\geq 20$ years
- Only index event
- Occurred between 01/02/2000 – 31/12/2017

**Exclusion Criteria:**
- Arrests that occurred in:
  - Theatre
  - Long-term Psychiatric Ward
- Patient’s address was outside Victoria

**Final Cohort**
Inclusion Criteria:
- Age ≥ 20 years
- Only index event
- Occurred between 01/02/2000 – 31/12/2017

Exclusion Criteria:
- Arrests that occurred in:
  - Theatre
  - Long-term Psychiatric Ward
- Patient’s address was outside Victoria

Final Cohort
Cohort

Full Registry n=846 (100%)

Patients ≥20 years of age n=818 (97%)

Index cases only n=775 (92%)

Final cohort n=681 (80%)

Survival beyond discharge analysis n=672 (79%)

Exclusions
- Missing age n=8
- <20 years of age n=20

Exclusions
- Non index event=43

Exclusions
- Out-of-hospital cardiac arrest n=81
- Theatre n=7
- Non-acute psychiatric ward n=1
- Not hospital inpatient n=5

Exclusions
- Not residing in Victoria n=9
Characteristics

- **AGE**: 70.3 years
- **Gender Distribution**:
  - M: 59%
  - F: 41%
- **Arrhythmia Distribution**:
  - VF/VT: 26%
  - PEA: 39%
  - Asystole: 23%
  - Missing: 11%
- **ED**: 38%
- **Wards**: 38%
- **ICU/CCU**: 24%
- **Time to Intubation**: 14.6 minutes
Survival of the Event (ROSC)

55%  45%
Survival to Discharge

33%  67%
Survival to 1-Year Post-Arrest

| 27% | 73% |
Survival Beyond Discharge

Matched Population

Study Cohort
Survival Beyond Discharge
## Regional Survival

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What about smaller hospitals?
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What about smaller hospitals?

Should we compare regional vs. metropolitan across the state?
Survival to Discharge
Survival to Discharge

....or just out one door in another?
Survival to Discharge

....or just out one door in another?

Survival to 30 days post-arrest
Long Term Survival

$\text{SMR} = 8.2$

(First Year)
Long Term Survival

SMR = 8.2
(First Year)

WHY?
Limitations / Future Directions

- Single hospital in a large regional town
- Linkage may have under-reported long-term mortality
- Compared to standard population, not hospital controls
- No data on quality of life
Limitations / Future Directions

- Single hospital in a large regional town -> state-wide data
- Linkage may have under-reported long-term mortality
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Limitations / Future Directions

• Single hospital in a large regional town -> state-wide data
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Limitations / Future Directions

• Single hospital in a large regional town -> state-wide data
• Linkage may have under-reported long-term mortality -> national registry
• Compared to standard population, not hospital controls -> match appropriately
• No data on quality of life
Limitations / Future Directions

• Single hospital in a large regional town -> state-wide data
• Linkage may have under-reported long-term mortality -> national registry
• Compared to standard population, not hospital controls -> match appropriately
• No data on quality of life -> CPC scores retrospectively
Conclusion

• First Australian study to describe IHCA survival in a regional setting
• Survival in a regional setting may be equivalent to a metropolitan setting
• Survival to Discharge may not be a valid outcome measure in regional settings