E**IT 6311 Data Tables**

**Data tables**

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| **Table 1:**  included studies per geographical region in alphabetical order | | |
| **Region** | **No. of studies** | **Countries** |
| Africa | 1 | Nigeria (1) *– lower-middle1* |
| ANZ | 3 | Australia (2), New Zealand (1) *– both high1* |
| Asia | 5 | Cambodia (1) *– lower middle1*, China (1) *– upper-middle1*, Japan (1) *– high1*, South Korea (1) *– high1*, Taiwan (1) *– high1* |
| Europe | 19 | Austria (2), Belgium (1), France (4), Norway (3), Spain (3), Switzerland (2), UK (4) *– all high1* |
| Middle East | 1 | Oman (1) *– high1* |
| North America | 12 | Canada (2), USA (10) *– both high1* |
| South America | 2 | Brazil (2) *– upper-middle1* |
| **Total** | **43** |  |

**Table 1:** included studies per geographical region.

1 Respective income classifications as per definition of the World Bank (https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups)

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| **Table 2: included studies** | | | | |
| **Study**  (author, year) | **Country**  (study or corresponding author) | **Publication type** | **Content description** | **Comments** |
| **Novel kinds of the concept related to resuscitation** | | | | |
| Berg, 2020 [1] | USA | AHA Guideline | Various additional versions of chains of survival: Adult IHCA and OHCA, paediatric IHCA and OHCA, neonatal, also including a 6th link of the chain of survival (recovery) |  |
| Cummins, 1991 [2] | USA | Statement | First description of the known concept of the chain of survival in English | A preliminary version (a “rescue chain”) was already defined by Ahnefeld et al. in 1966 [3] |
| Hwang, 2021 [4] | South Korea | Korean Guidelines | Differentiating between a chain of survival for OHCA and for IHCA (Korean guidelines 2020) |  |
| Ranse, 2010 [5] | Australia | Original research | Description of a chain of survival at mass gatherings (early planning - early access / help - early CPR - early defibrillation - early ALS), and a list of barriers and facilitators |  |
| Rochester, 1997 [6] | UK | Letter | Description of a paediatric chain of survival (early recognition - early emergency care with a focus on foreign body removal and rescue breaths - early EMS activation - early PALS) |  |
| Schnaubelt, 2023 [7] | Austria | Letter | Description of the chainmail of survival as a concept adaptable to various kinds of situations |  |
| Smith, 2010 [8] | UK | Letter | Description of a chain of prevention for IHCA (education - monitoring - recognition - call for help - response) |  |
| Wang, 2019 [9] | China | Commentary | Description of a survival chain characteristic to China, which divides the cardiac arrest cycle into 3 phases: Phase 1: Pre-arrest (precaution - pre-warning - early recognition; early signs of cardiac arrest should be identified, potential risk factors be treated, and special attention paid to patients with underlying diseases with a high risk of developing cardiac arrest). Phase 2: During arrest (standardization - individualization - diversification; standardized treatment are basically the AHA/ERC recommendations; for diversification, some techniques like abdominal compressions were mentioned but no specific techniques are mentioned for individualization; the management of cardiac arrest should take account of location, timing and patient conditions. Phase 3: Post-arrest (achieving ROSC and managing reversible causes - post resuscitation care - extension of heart [when a patient is less likely to survive, the family in encouraged to donate the organs of the victim - in Chinese culture, a heart is an organ of mind and by donating the organs, life is extended on someone else]) |  |
| **Novel kinds of the concept not directly related to resuscitation** | | | | |
| Bakke, 2017 [10] | Norway | Editorial | Description of a trauma chain of survival (early first aid - early BLS/ALS - early advanced therapy- early rehabilitation) |  |
| Boller, 2012 [11] | USA | Concepts | Description of a chain of survival for animals |  |
| Bossaert, 2009 [12] | Belgium | Editorial | Description of a chain of survival of ST elevation myocardial infarction (early recognition and access to the EMS, early STEMI diagnosis, early reperfusion, early definitive care) |  |
| Buleon, 2020 [13] | France | Editorial | Description of a pandemic chain of survival (research - governments - population safety - industry - system adaptation - social system) |  |
| Calamai, 2019 [14] | France | Commentary | Description of a chemical, biological, radiological and nuclear (CBRN) chain of survival (spot decontamination - early toxidrome recognition - early antidotes - extensive decontamination - transport to a hospital); also as a didactic tool because the basic concept is known --> memorization is thus thought to be easy and prolonged ("cognitive lifeline"); could also be used for public communication in time of crisis; provides a standard reference for research and comparisons |  |
| Chandy, 2007 [15] | Cambodia | Original research | Suggestion of a chain of survival for complicated deliveries (rural chain-of-survival network to manage delivery complications and thereby reduce maternal and perinatal mortality; integrated in already-existing rural trauma network) |  |
| Husum, 2003 [16] | Norway | Original research | Description of a chain of survival for land mine victims (reach victims as soon as possible - on-site resuscitation - evacuation - paramedics for assessment and documentation - local coordinators organize regular training sessions) |  |
| IFRC, 2020 [17] | Switzerland | IFRC Guidelines | International first aid and resuscitation guidelines 2020 - Description of a chain of survival behaviours in first aid (prevent and prepare - early recognition - first aid - access help - self recovery / early medical care) to define the broad domains of first aid education |  |
| Jauch, 2013 [18] | USA | AHA / ASA Guideline | Description of the stroke chain of survival (recognition, transport, triage, early diagnosis and treatment, final hospital disposition; also: detection - dispatch - delivery - door - data - decision - drug - disposition); "Within regions and institutions, the exact composition of the system and chain may vary" |  |
| Jouffroy, 2022 [19] | France | Letter | Description of a chain of survival for septic shock (early identification - severity assessment - antibiotics - hemodynamic optimization) |  |
| Kaliaperumal, 2022 [20] | Switzerland | Concepts | Description of a chain of survival for industrial emergencies and disasters (prevention [infrastructure safety, managerial safety, buddy system, protocols] - recognition [identification tools and monitors, education and training, community vigilance and training] - early response system [universal number, local medical units, evacuation, communication channels, community response and resilience] - advanced care [early EMS, definitive care] - early rehabilitation [early return to work, retraining]) |  |
| Kalu, 2020 [21] | Nigeria | Original research | Description of a chain of survival for anesthetic equipment for optimal patient care (acquisition of appropriate equipment - training of end users - prompt preventive maintenance - timely repair - replacement); also: local producers in LMIC needed |  |
| Latif, 2023 [22] | USA | Review | Description of a chain of survival for severe hemorrhage (prevention - prehospital hemorrhage control - timely recognition of shock - resuscitation - definitive hemostasis - achieving endpoints of resuscitation |  |
| Ludwig, 2008 [23] | USA | Letter | Description of a survival ladder for emergencies other than cardiac arrest (with each step on the ladder you get closer to success) |  |
| Lund, 2017 [24] | Canada | Concepts | Description of an event chain of survival (preparations by event producers - police and security - festival health by various groups - on-site medical services - ambulance services - off-site medical services) |  |
| Martin-Ibanez, 2019 [25] | Spain | Statement | Description of a civilian tactical survival chain for incidents involving multiple intentional injury victims, e.g., terror attacks; participants at each point of the chain of survival must have clear missions. Care under direct threat (override threat - control bleeding) - care under indirect threat (establishing care priorities) - evacuation |  |
| Mould-Millman, 2014 [26] | USA | Abstract | Description of an African trauma chain of survival (system activation - first responder care - prehospital care / transport - in-hospital emergency / definitive care systems) | Abstract only, limited information available. |
| Ornato, 2007 [27] | USA | Editorial | First description of the ST elevation myocardial infarction chain of survival (early symptom recognition and call for help - evaluation and treatment by EMS - evaluation and treatment by ED - reperfusion) |  |
| Rudd, 2020 [28] | UK | Review | Description of a chain of survival for emergency stroke care (community awareness and call for help by bystanders - early recognition and rapid dispatch by dispatchers - early prehospital care and triage by EMS - early treatment for ischemic and hemorrhagic stroke in the hospital - early rehab and follow-up) |  |
| Soreide, 2012 [29] | Norway | Editorial | Description of a trauma chain of survival (early first aid - early BLS/ALS - early advanced therapy- early rehab) |  |
| Szpilman, 2014 [30] | Brazil | Concepts | Description of a drowning chain of survival (prevent drowning - recognize distress - provide flotation - remove from water - provide care as needed) |  |
| Timerman, 2021 [31] | Brazil | Letter | Description of a COVID-19 chain of survival (science - awareness - training - structure - return of patients and healthcare to normal) |  |
| Webber, 2010 [32] | New Zealand | Abstract | Description of the "Wet chain of survival" (stressing the necessity of prevention and ventilation) | Abstract only, limited information available. |
| **Mere adaptations** | | | | |
| Bunch, 2005 [33] | USA | Review | Description of an expanded chain of survival after ventricular fibrillation OHCA (expansion through neurologic stabilization, cardiac stabilization, ICD implantation, rehab, secondary prevention) |  |
| Canovas Martinez, 2018 [34] | Spain | Letter | Description of a survival cycle based on the chain of survival - beginning with preparation |  |
| Coute, 2022 [35] | USA | Letter | Depiction of survival odds along the chain of survival in contrast to research funding allocation to highlight disparities |  |
| Deakin, 2018 [36] | UK | Letter | Adapting the rings of the chain of survival according to relevance in ratios, thus focussing on effectiveness of interventions instead on the interventions per se; this is to inform clinicians, scientists, etc., whereas the "classic" chain should stay for the lay public |  |
| El-Deeb, 2013 [37] | Oman | Concepts | More detailed description of the STEMI chain of survival (early recognition - early access - early diagnosis - early risk stratification - early reperfusion - early medications) |  |
| Gonzalez-Salvado, 2017 [38] | Spain | Letter | Description of a chain of life, including prevention, rehabilitation and a healthy lifestyle as a new link, and then also suggesting making it into a cycle. |  |
| Jacobs, 2001 [39] | Australia | Expert panel opinion | Description of an extension of the chain of survival by preventive strategies including various medications and ICD implantation |  |
| Quinlan, 2015 [40] | Canada | Abstract | Stressing the importance of adding family support as an additional link | Abstract only, limited information available. |
| Schnaubelt, 2023 [41] | Austria | Statement | Description of the chainmail of survival for low-resource settings |  |
| **Impact on outcomes** | | | | |
| Dahan, 2014 [42] | France | Abstract | Bystander CPR rates were increased after an information campaign about the chain of survival in France: 23% vs. 31%, p<0.001. | Abstract only, limited information available. Causal effect questionable (many confounders and other reasons for an increase possible). |
| Liu, 2020 [43] | Taiwan | Original Research | Comparison of survival rates before and after the introduction of the 5th link of the chain of survival (post arrest care) by the AHA in 2010: For patients with IHCA, overall short-term survival significantly improved after modification of the chain of survival, and both short- and long-term survival improved in younger patients and patients with chronic heart disease. | Most probably an effect of changed treatment focus and not the changed chain itself, but there could be a partial effect. |
| Tagami, 2012 [44] | Japan | Original Research | Comparison of neurological outcome before and after the introduction of the 5th link of the chain of survival by the AHA in 2010: The proportion of OHCA patients with favourable neurological outcome improved significantly after the implementation of the 5th link, which may be an independent predictor of outcome. | Most probably an effect of changed treatment focus and not the changed chain itself, but there could be a partial effect. |

**Table 2:** Data extraction table with the publications grouped in: novel concepts, mere adaptations, and reports on a potential impact of the concept on outcomes.