



FOCUS ON
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Cardiopulmonary resuscitation and basic life support guidelines for people with disability: a scoping review

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Emergency Care Technician (ILS)

Emergency Care Assistant (ILS)

Ambulance Emergency Assistant (ILS)

Basic Ambulance Assistant (BLS)

Operational Emergency Care Orderly (ILS)

This activity is approved for **THREE (3) Clinical** Continuing Education Units (CEU's)

Cardiopulmonary resuscitation and basic life support guidelines for people with disability: a scoping review

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ABSTRACT

Purpose: To explore literature, policies or procedures available to care providers on how to deliver CPR and BLS to people with a disability, for whom the current standard guidelines are not fit for purpose.

Material and Methods: A scoping review was conducted using four databases, namely, CINAHL, PubMed, Scopus, Medline and Google Scholar. Keywords used included, disab*, wheelchairs, cardiopulmonary, resuscitation, “basic life support”, life support care, and bystander CPR. 1119 papers were retrieved and 1043 were screened following removal of 76 for duplication. 18 full text articles were reviewed and 5 met the inclusion criteria.

Results: The five articles were from three counties and included one case study, three expert opinion papers and one intervention study. Four of the papers advocated in favour of improved CPR and BLS guidelines and three of the papers discussed techniques and ideas for supplementation of standard CPR and BLS.

Conclusion: The scoping review has uncovered a paucity of evidence explaining delivery of CPR and BLS for people with disability and highlights the need for further research. In the absence of further evidence, it is reasonable for educators to provide ideas and discussion about supplementing CPR and BLS for people with disability to carers.

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KEYWORDS

Cardiopulmonary resuscitation; basic life support; people with disability; carers; guidelines

> IMPLICATIONS FOR REHABILITATION

- People with disability and wheelchair users are at a high risk for premature or preventable deaths.
- Improved first aid responses are proposed to be a mitigating factor for premature and preventable deaths.
- Improved first aid responses will afford people with disability and wheelchair users the same opportunities for care and rehabilitation as people without disability.
- Formal and informal carers do not currently have prescriptive guidelines to improve their knowledge on responding to emergency events for people with disabilities.
- Development of improved guidelines is recommended to reduce fear and anxiety for formal and informal carers whilst also increasing their confidence to respond to emergency situations.

Introduction

Globally it is estimated that 18% of the population have a disability of some kind, with approximately 75–80% of these people having a physical disability [1]. Furthermore, there is a significant gap in life expectancy between people who do and do not have a disability. People with disability live on average 25 years less than people without a disability [2]. There has been extensive research to identify the causes of premature and preventable deaths in people with disability and common causes have emerged [3–6]. Choking is identified as a leading cause of death together with cardiac and respiratory illness. Numerous reports suggest that improved first aid responses from care givers could reduce these deaths [3–6]. The current Australian, European, American and International consensus guidelines for delivery of cardiopulmonary resuscitation (CPR) and basic life support (BLS) do not include guidance for delivery of these life saving techniques to people with disability [7–10]. There are a number of key factors during delivery of CPR and BLS that are difficult to apply to people with disability, particularly those who use a

wheelchair and/or have an atypical chest shape, such as how to keep airways clear and open using a head tilt manoeuvre, delivering chest compressions in the centre of the chest whilst the person is on a hard flat surface, and how to do this as quickly as possible [7–10]. Delivery of timely and optimal CPR and BLS is directly correlated to improving survival rates [11, 12].

This literature review will describe what current practices or techniques or guidelines exist for how to supplement or augment CPR and BLS for people with a disability where the standard guidelines that are available do not address the requirements of people with disability. Standard education of CPR and BLS delivered internationally directs the care provider to lay the person on a hard flat surface to deliver chest compressions [7, 8, 10] and to deliver back blows and alternating chest thrusts or abdominal thrusts to relieve choking [8, 13]. This standard care does not provide advice for how to deliver care to a person who is a wheelchair user or to a person who has an atypical chest shape that prevents them from lying flat, receiving standard compressions, or receiving standard choking care.

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Aim

To explore literature, policies or procedures available to care providers on how to deliver CPR and BLS to people with a disability for whom the current standard guidelines are not fit for purpose.

Method

A scoping review is useful when the literature pertaining to a topic has not been comprehensively reviewed [14], or when there is a desire to identify knowledge gaps, or clarify concepts [15].

This literature review has been conducted in line with the Joanna Briggs Institute (JBI) guidance for scoping reviews 2020 to explore what literature is available to guide carers in providing CPR and BLS to people with disability [16].

No protocol was registered for this review.

Inclusion criteria

Literature that describes manual CPR or BLS, for people with disability, that could be delivered by a person in the community with no equipment available was included in the review

A majority of emergency incidents occur in the community and more specifically in a person's home [11]. This in turn means that the people providing BLS and CPR are doing so without access to equipment or a large team of health professionals.

Results were not limited by date, or type of article. This was kept broad to facilitate capture of literature published on this topic.

Results had to be available or published in English.

Exclusion criteria

Literature that discussed disability as an outcome of CPR and BLS was excluded as this review was completed to discover what care can be provided to people with existing disability.

Care provided to people with disability needed to be in addition to the standard current Australian Resuscitation Council guidelines, a summary of which is found in Table 1.

Table 1. Standard Australian CPR and choking guidelines.

DRSABCD sequence to deliver CPR	
Danger	Check for danger to self, others and the victim. Remove the danger or the person as needed to ensure safety
Response	Check for a response using the talk and touch technique
Send for help	Call an ambulance and ask other people nearby to assist
Airway	Provide a full head tilt (in adults) and open the mouth to create a clear and open airway
Breathing	Look listen and feel for signs of normal breathing
Compressions	If the person is unconscious and breathing place in the recovery position and continue to monitor. If the person is unconscious and not breathing normally begin compression in the centre of the chest at 120 compressions per minute. Alternatively with two rescuers complete 4 cycles of 30 compressions and two breaths each minute. Compressions need to be delivered on a hard flat surface.
Defibrillation	As soon as it is established that compression need to be given locate and retrieve the nearest defibrillator to apply to the victim.
BLS for choking	Alternate between 5 back blows, delivered between the shoulder blades and 5 chest thrusts, delivered in the centre of the chest, until the obstruction is relieved. If the person becomes unconscious and stops breathing place them on a hard flat surface and commence DRSABCD

[1].

Due to the limited time and funding, results had to be available in English as translation services are expensive and time consuming.

Search strategy

As per the JBI guidance for scoping reviews, an initial search of two large databases (CINAHL and PubMed) was conducted to gauge the breadth of literature available [16]. Knowing that there was minimal literature available for the topic the search strategy was further refined in consultation with the University School Librarian, who also provided further recommendations for databases to search. There are a number of databases used by nursing researchers. Some of the most common are Medline (Ovid), PubMed and CINAHL (cumulative index to nursing and allied health literature). Scopus was also included as it collects evidence from 240 disciplines including those outside the field of nursing and healthcare [17]. All searches were conducted between 19th and 27th April 2023 and were not limited by type of result or date. Following database searches, Google Scholar was used to cover further disciplines and sources. This was completed on the 28th April 2023. The reference lists of the studies chosen for inclusion were searched to identify further literature in this field, with no new results.

Key terms

Wheelchairs, disab*, cardiopulmonary, resuscitation, "basic life support", life support care, bystander CPR, cerebral palsy, body composition. Search strategy example from CINAHL shown in Table 2.

Searching databases yielded 1117 results which were uploaded to Covidence to assist with management of the review process. After loading into Covidence, 76 duplicates were found and excluded, Google scholar searching discovered two additional results and these were also uploaded to Covidence. The first author screened the title and abstract of 1043 results, a second screening was completed by the other authors, dividing the literature amongst them, to provide a robust review.

Table 2. Search conducted in CINAHL.

1.	CPR.mp. or (Cardiopulmonary Resuscitation/ or Heart Massage/ [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word])
2.	Out-of-Hospital Cardiac Arrest/ or basic life support.mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]
3.	(disab* or wheelchair).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]
4.	(seated or sitting).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]
5.	3 or 4
6.	1 or 2
7.	5 and 6

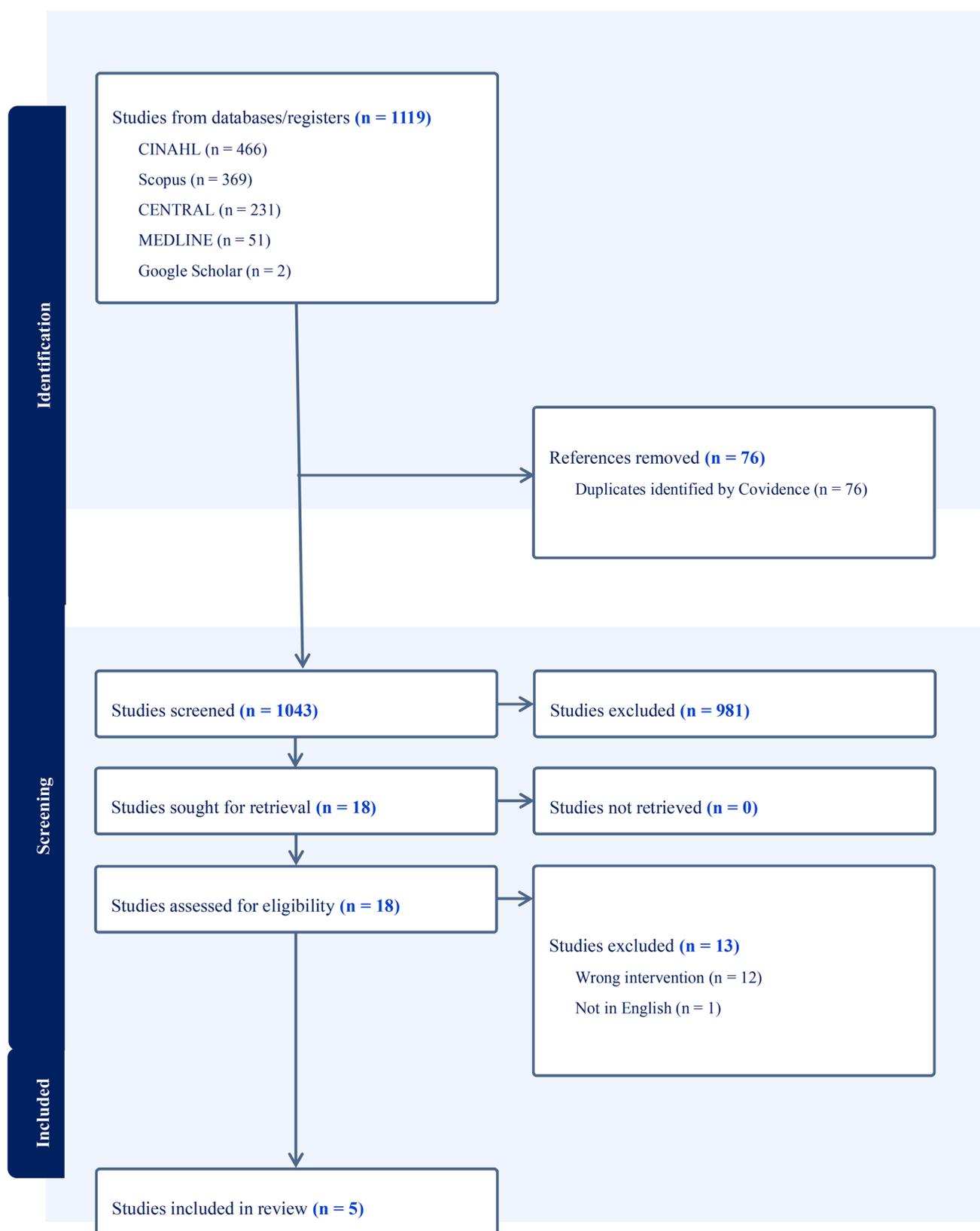


Figure 1. Covidence literature review flowchart.

Eighteen papers were identified for full text review and again the first author reviewed all of these with the remaining authors completing a second review by dividing the full text reviews to check for consensus. Five papers were chosen for inclusion and thirteen papers were excluded, as they contained no discussion

about pre-existing disability and CPR or BLS delivery ($n=12$) or were not published or available in English ($n=1$). No conflicts were noted during the full text or inclusion process. The flowchart for the literature review demonstrates this process and is included as Figure 1.

Table 3. Data extracted from papers included in scoping review.

Author / date	Title / Methodology	Country	Sample size	Intervention	Aims	Results
Nielepiec-Jalosinska 2010	Upper airway obstruction in handicapped persons. Case study	Poland	1	Clinical intervention described. Abdominal thrusts to women in a wheelchair by mother, who was an emergency physician, by wrapping arms around chair and abdomen.	Provide alternative abdominal thrust technique for person with high body weight (60 kg) in wheelchair.	Abdominal thrust is achievable when the rescuer is positioned to the rear of the wheelchair.
Cash 2008	Basic life support (BLS) and children with profound and multiple learning disabilities. Opinion paper	UK	0	Nil	Development of content to be included in BLS for nurses in learning disability stream.	Discussion about need to augment CPR and BLS for people with profound and multiple learning disabilities. Justification for the need for improvement. Discussion and expert opinion on what supplemental information can be provided to students.
Thomas 2020	BLS for children and young people with a learning or physical disability and an altered body shape. Opinion paper	UK	0	Nil	Continuous Professional Development (CPD) for nurses to initiate thought about the needs of people with disability during CPR and BLS.	Identification that modification of BLS and CPR for people with disabilities is required. Ideas for staff to consider when caring for people with disabilities. Description of how the standard guidelines could be supplemented in some scenarios.
Page 2011	BLS for people with profound and multiple learning disabilities. Opinion paper	UK	0	Nil	Highlight need for improved education or practice regarding BLS and CPR for people with disabilities.	Discussion and justification about need for improved guidelines to deliver CPR and BLS to people with profound and multiple learning disabilities. Reports on symposium conducted with nurses
Deegan 2023	CPR for people who use a wheelchair and/or have an atypical chest shape: an educational intervention. Intervention study	Australia	58	Educational intervention delivered to formal paid carers from disability support organisation.	Does the addition of disability specific information during CPR classes improve confidence to respond to emergency scenarios with these populations immediately, and six months post the training.	Reports on the impact that inclusion of disability specific CPR and BLS information had on the confidence levels of carers to respond to an emergency. Confidence levels were significantly increased. Disability specific CPR information included in paper.

1. ANZCOR. Basic Life Support – Flowchart. Australian Resuscitation Council 2023.

Results

Using Covidence, data were extracted from the studies and an Excel spreadsheet was generated to compare themes and ideas across the included studies. This was completed by the first author with the other authors checking the data for consensus and verification. A final summary of the extracted data is included in [Table 3](#).

Summary of papers included

Papers originated from three countries, Australia ($n=1$), Poland ($n=1$), and the UK ($n=3$). Publishing dates ranged from 2008 – 2023. There was one case study, three opinion papers and one intervention study. Four of the papers provided justification of the need for improved guidelines for delivery of CPR and BLS to people with disability, while three of the papers provided expert opinion and ideas for how to supplement CPR and BLS education for carers of people with disability.

Case study

The case study by Nielepiec – Jalosinska [18] discussed the successful application of abdominal thrusts to a woman who was

seated in a wheelchair. Abdominal thrust delivery is the standard care advised by the UK Resuscitation Council for a person who is choking [8]. The emergency care was delivered to the woman by her mother who was also an emergency physician, suggesting an advanced level of knowledge that is not attributed to the general disability support workforce, who are reported to be under skilled with low levels of organisational support for training [19]. There is no discussion in the paper about the type of wheelchair the woman was using at the time of the intervention. Notably, wheelchairs can vary greatly in size and shape which would have a direct impact on the ability of the rescuer to reach around the back of the wheelchair and the person to deliver effective abdominal thrusts. It must also be noted that the individual characteristics of people with disability may preclude the use of this technique for all.

Opinion papers

All opinion papers were published in the UK and provide expert opinion on how to supplement standard CPR and BLS for nurses in the profound and multiple learning disability stream of nursing education. The two papers by Cash and Page focussed on the education of undergraduate nurses [20, 21] while the Thomas paper was a continuing professional development activity for

practicing nurses [22]. Further, these papers contain useful justification for why supplementation is needed, to provide people with disability access to a clinical intervention that would result in improved emergency care and to improve responses by reducing the fear and anxiety that exists in regard to providing this care to people with disability [20–22]. Expert opinion is routinely seen as the lowest level of evidence in qualitative healthcare research, despite there being many iterations of evidence hierarchies available [23, 24]. Although expert opinion attracts criticism for its potential bias and inability to establish effectiveness of an intervention, what it does provide is contextual information and ideas where there are no other relevant studies available [25].

Intervention paper

The paper by Deegan et al. [26] described a pilot study where expert opinion-derived supplemental education was delivered to formal carers of people with disability during standard CPR and BLS classes. The intervention was delivered to 58 study participants who self-assessed their confidence to provide care pre- and post-training and at six months follow-up. The paper demonstrated that there was a significant increase in confidence, to respond to emergencies that involved people with disability, between pre training and both immediately post and six months post training. [26] This intervention study was a pilot study with a small sample size and would benefit from replication with a larger sample and with participants who have a more extensive demographic range.

Discussion

The literature included in this scoping review was minimal and generally constituted a low level of evidence when assessed against the JBI levels of evidence for meaningfulness, with four of the papers being expert opinions which are classified as very low level (level 5) and one being a single qualitative study classified as moderate level (level 3) [27, 28]. It is important to note that while expert opinion garners the lowest level of meaningfulness, it is considered by healthcare clinicians as a valid form of evidence particularly when an intervention is required in practice when no other evidence exists. Clinicians also argue that where there is a need for an intervention they must respond to the patient regardless of how much research has been conducted on the intervention and as such expert opinion is necessary and valid [29].

This scoping review therefore illustrates that there are academics and clinicians actively involved in improving CPR and BLS delivery for people with disability. Expert opinion has been provided for how to supplement standard CPR and BLS care for people with disability. The clinical practices suggested by the experts have not demonstrated any harm but have demonstrated that at a minimum care providers feel more confident to provide care. In the absence of further research, it would be reasonable to continue to provide further education, based on a consensus of expert opinion, to care givers who are providing support to people with disability, and supplement standard CPR and BLS education with disability-specific information. Noting that CPR and BLS should be always delivered as close to standard guidelines as possible.

There is significant scope for continued research in this area that can provide higher levels of evidence to inform the delivery of and content for an educational intervention specifically for carers of people with disability. It remains open to conjecture why this research has not been completed previously and why this gap in evidence exists. To create a robust educational intervention, it would be pertinent to first gather evidence of effectiveness for the expert clinical practices as this does not yet exist

[30]. Potential explanations for the evidence gap also include the possible reduced capacity for people with disability to consent to being involved in research and the ethical challenges involved with including people with disability in research [31–34]. Homogenous samples during clinical trials improving quality of research and reducing cost [35, 36] but leading to exclusion of people with disability who have unique and individual differences. The low value or negative attitudes that have been placed on people with disability during history [37] or the de-professionalisation of the disability workforce [38], or potentially a combination of one or all of these, could also be factors.

One potential limitation of this scoping review is that other researchers have conducted work in this space that has not been discovered during this scoping review, however the scarcity of the literature demonstrates that there is indeed a research gap in this field that will benefit from further study.

Conclusion

This scoping review has identified that there is an emerging desire to understand how to apply CPR and BLS to people with disability and that currently there is very limited literature pertaining to how to achieve this goal. Several possible reasons for this gap have been hypothesized with no definitive answer for why research in this field is lacking, what this does provide is a platform for ongoing research to discover the needs of people with disability and their carers and further research into how to provide CPR and BLS to people with disability for whom the standard guidelines are not adequate.

Placing people with lived experience of the research topic at the centre of research is increasingly popular and leads to outcomes that better serve the population the research is conducted for, whilst improving generalizability and reducing discriminatory practices [39]. This movement demonstrates a shift in thought from needing a homogenous sample to using a sample that is fit for purpose and perhaps demonstrates that many of the ethical challenges regarding consent for people with disability have been combatted using updated approaches to gaining informed consent.

This scoping review demonstrates the need for further testing of expert opinions for clinical effectiveness, development of intervention studies, research into the feasibility of individual emergency care plan and ongoing development of standardised supplementation to CPR and BLS guidelines.

REFERENCES

Available on request

QUESTIONNAIRE

E2(25)

Cardiopulmonary resuscitation and basic life support guidelines for people with disability: a scoping review

INSTRUCTIONS

- Read through the article and answer the multiple-choice questions provided below.
- **Some questions may have more than one correct answer;** in which case you must mark **all** the correct answers.

Introduction

Question 1: Which **ONE** of the following statements is **INCORRECT**?

- A:** It is estimated that 18% of the population have a disability of some kind,
- B:** Approximately 75–80% of people with a disability have a physical disability
- C:** People with disability live on average 10 years less than people without a disability

Question 2: Which of the following two are identified as leading causes of death for people with disabilities?

- A:** Choking
- B:** Diabetes
- C:** Cardiac illness
- D:** Cancer

Question 3: Is it **TRUE** that numerous reports suggest that improved first aid responses from care givers could reduce untimely deaths of people with disabilities?

- A:** YES
- B:** NO

Question 4: Which of the following two are key factors which are difficult to apply during delivery of cardiopulmonary resuscitation (CPR) and basic life support (BLS) to those who use a wheelchair and/or have an atypical chest shape?

- A:** To keep airways clear and open using a head tilt manoeuvre
- B:** To deliver chest compressions in the centre of the chest whilst the person is on a hard flat surface
- C:** To deliver cardiopulmonary resuscitation(CPR) and Basic Life Support(BLS) carefully and slowly

Question 5: Standard education of CPR and BLS delivered internationally directs the care provider to which of the following?

- A:** To lay the person on a hard flat surface to deliver chest compressions
- B:** Exactly how to deliver care to a person who has an atypical chest shape that prevents them from lying flat
- C:** To deliver back blows and alternating chest thrusts or abdominal thrusts to relieve choking
- D:** How to use the head tilt manoeuvre to a person who is a wheelchair user

Results

Question 6: Abdominal thrust delivery is the standard care advised by the UK Resuscitation Council for a person who is choking. In a case study by Nielepiec – Jalousinska, which of the following is **TRUE**?

- A:** The general disability workforce is skilled as they have high levels of organisational support for training
- B:** The size and shape of a wheelchairs have a direct impact on the ability of the rescuer to deliver effective abdominal thrusts
- C:** The individual characteristics of people with disabilities will not preclude the use of this technique

Question 7: Although expert opinion is regarded as the lowest level of evidence in qualitative healthcare research, it still has value for which of the following reasons?

- A:** Limited bias
- B:** Ability to establish effectiveness of an intervention
- C:** Providing contextual information and ideas where there are no other relevant studies available

Question 8: *Deegan et al.* demonstrated that there was a significant in confidence to respond to emergencies that involved people with disability, between pre-training, and both immediately post- and six months post training.

- A:** Decrease
- B:** Increase

Discussion

Question 9: Is it **TRUE** that expert opinion is considered by healthcare clinicians as an invalid form of evidence, particularly when an intervention is required when no other evidence exists?

- A: YES
- B: NO

Question 10: Which of the following is a **TRUE** reason why it would be reasonable to use a consensus of expert opinion?

- A: To supplement standard CPR and BLS education with disability-specific information
- B: To limit potential harm done by expert opinion
- C: To ensure care providers have more confidence in providing care

Question 11: Is it **TRUE** or **FALSE** that evidence of effectiveness for the expert clinical practices must be gathered in order to create a strong educational intervention?

- A: TRUE
- B: FALSE

Question 12: Which of the following is **NOT** included in potential explanations for the evidence gap?

- A: The possible reduced capacity of people with disability to consent to being involved in research
The ethical challenges involved
- B: Homogenous samples being sought in clinical research leading to the exclusion of people with disability who have unique and individual differences
- C: None of the above

Conclusion

Question 13: This scoping review has identified which of the following?

- A: An emerging desire to understand how to apply CPR and BLS to people with disability
- B: Very limited literature pertaining to how to achieve this goal
- C: The research gap in this field

Question 14: Which of the following is **TRUE** about placing people with lived experience of the research topic at the centre of research?

It

- A: Is increasingly unpopular
- B: Leads to outcomes that better serve the population that the research is conducted for
- C: Reduces generalizability
- D: Increases discriminatory practices

Question 15: This scoping review demonstrates the need for all of the following, except for

- A: Testing expert opinions on clinical effectiveness
- B: Development of intervention studies
- C: Research into the feasibility of general emergency care plans
- D: Ongoing development of standardised supplementation to CPR and BLS guidelines

THE END



MEMBER INFO

(Complete sections marked with an asterisk *)

***FOH number**

***HPCSA number**

ID number

Personal detail changes

I hereby declare that the completion of this document is my own effort without any assistance.

SIGNED:

DATE:

This activity is accredited for **THREE (3) CLINICAL CEU'S**. You have to achieve **70%** to pass this activity.

ANSWER SHEET

E2(25)

Cardiopulmonary resuscitation and basic life support guidelines for people with disability: a scoping review

	*Time spent on activity					hour		min				
	A	B	C	D	E			A	B	C	D	E
1						8						
2						9						
3						10						
4						11						
5						12						
6						13						
7						14						
						15						

How relevant was the content of this activity to your scope of practice?			
			
Not at all	Somewhat	Mostly	Extremely

RETURN ANSWER SHEET TO

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