**ABSTRACT**

Information may alleviate or reduce relocation stress, but the best method to use during critical care discharge is unclear. This paper details a narrative critical review reporting (1) the current evidence base around the use of adult critical care discharge information and (2) the extent of service user involvement in the design and evaluation of such information. Seven identified publications reported data from 121 patients, 252 relatives and 33 nurses. The evidence base was of low overall quality, but showed beneficial physical effects for patients, and increased knowledge and satisfaction for relatives with the use of individualized information. Findings highlight the significant gaps in our knowledge and understanding. The discussion focuses on the consequences of such findings for the future development of information, which meets service users’ needs. Results should inform the design of future studies investigating this neglected area of critical care practice.

**Keywords**

Relocation stress

Literature review

Critical care/Intensive care

Patient discharge/Patient transfer

Patient education handout/Information

Anxiety

Family

Service user involvement

**INTRODUCTION AND BACKGROUND**

Discharge from critical care presents significant challenges for patients and relatives and can lead to substantial distress and uncertainty,1 a state defined by the North American Nursing Diagnosis Association (NANDA) as relocation stress.2

Providing information may alleviate or reduce relocation stress, and optimize early critical illness recovery; but the best way to do this is unclear. A number of authors have described the development of critical care discharge information booklets.3,4,5,6,7 Organizations such as the Intensive care society,8 Society of Critical Care Medicine9 and charities such as ICUSteps10 have also produced written booklets, which have been made available via the Internet. Additionally, hospitals commonly develop their own local materials.

Despite the potential of written information to improve health outcomes,11,12 uncertainty regarding its advantages remains, amplified by the cost of providing such resources.13 Griffiths & Jones noted that the use of a booklet alone was not successful in reducing levels of anxiety or depression in critical care patients, 14. They did suggest, however, that in combination with other factors, such as an individualized rehabilitation programme, that a written booklet might be useful.14 In support of this, findings from a systematic review focused on discharge from hospital to home by Johnson & Sandford found that the combination of written and verbal information significantly increased satisfaction and knowledge.13

No published review currently exists exploring the effect of either the content or mode of delivery of information on psycho-social well being or other health outcomes for patients discharged from critical care to a hospital ward. Such evidence would provide important information to inform the development of future strategies.

This paper summarizes findings from a narrative critical review conducted by the authors. Findings are then used, as a foundation for a discussion of what is already known, and the gaps present in our understanding, of what might be required to meet the information needs of critical care service users during and after discharge to a ward.

**THE REVIEW**

The primary aim of the review was to identify and evaluate research conducted on the provision of verbal and/or written critical care (intensive or high dependency care) discharge information. It sought to determine how effective different methods of information giving are on: (1) adult patients’ physical health outcomes (readmission to critical care, recovery time, or complication rates) and (2) adult patients and relatives’ psycho-social outcomes (satisfaction, perceived anxiety, confidence in one's own care management, experience of discharge).

The review also considered a number of secondary questions:

1. Does the person providing the information, the content or method of providing the information, the time when it is given or the environment in which it is provided influence physical and/or psycho-social outcomes?

2. What resource issues are associated with the delivery of written and/or verbal information?

3. What are the views of health care professionals regarding the feasibility and effectiveness of written and/or verbal discharge information?

4. To what extent have service users been involved in the design of research evaluating critical care discharge information?

***METHODS***

The narrative critical review15 was conducted using guidelines from the Centre for Reviews and Dissemination (CRD).16 As an initial scoping exercise revealed very limited evidence from controlled trials, this review encompassed a range of designs, incorporating both qualitative and quantitative data. The review considered primary research published between 1990-2012 (of any design) investigating the delivery of written or verbal discharge information up to one week before or within one week after discharge from critical care by any health care professional. Studies involving adult patients (>18 years), their significant others (family, close friends) and/or health care professionals (nurses, doctors, allied health care professionals) were considered.

**Data sources, extraction and synthesis**

A search was conducted using the databases and keywords identified in Figure 117. Further, reference lists from retrieved papers, conference abstracts and critical care websites were explored. Experts in the field were also contacted to identify other work of relevance. A single researcher assessed the relevance of retrieved studies and extracted the data, which were then verified by a second researcher. Tools provided by the Critical Appraisal Skills Programme18 were used to appraise the quality of all relevant studies. A process of content analysis, as described by Dixon-Woods et al 19 was used to examine the extracted data for key themes relevant to the outcomes of interest. Data were then synthesized in a narrative fashion.

**Figure 1: Flow diagram of Study identification and selection process**

**Search terms:**

|  |
| --- |
| Each of the following sets of terms were combined to identify relevant papers: A: critical illness or intensive care or high dependency or critical care or ICU or ITU  or HDUB: information or education or teach\* or info\*C: booklet or internet or book or leaflet or pamphlet or oral or verbal or ad-hoc or written or package or pack\*D: discharge or transfer or move or transition or relocation |

**Inclusion/exclusion criteria**

|  |  |
| --- | --- |
| **Inclusion**1. Published primary research 2. Information provided during critical care discharge to ward period 3. Adult patients or family members receiving information4. Evaluation of effects of information5. Views of health care professionals  | **Exclusion** 1. Discussion papers2. Literature reviews3. Descriptions of information development and delivery processes  |

**Databases searched and results:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **A** |  | **B** |  | **C** |  | **D** | **Total** |
| **CINAHL** | 45631 | **AND** | 73737 | **AND** | 440466 | **AND** | 45858 | 7 |
| **MEDLINE/EMBASE/PsychINFO/BNI/SPP** | 213817 | **AND** | 1474526 | **AND** | 2671296 | **AND** | 975795 | 4 |
| **Web of Science** | 95836 | **AND** | >100000 | **AND** | >100000 | **AND** | >100000 | 1 |
| **Cochrane Library** |  |  |  |  |  |  |  | 0 |
|  | Total after duplicate removal | 7 |
|  | Total after reference checks of citations for additional studies  | 8 |

***RESULTS***

Seven out of an 8 identified publications were included in the review: two reported outcomes from a multi-centre randomized controlled trial,20,21 three reported outcomes from two quasi-experimental studies,22,23,24 one detailed results of a questionnaire survey25 and a final paper reported data from an action research project.6 In total, data were collected from 121 patients, 252 relatives and 33 nurses. Table 1 details each of the included papers. A further paper was excluded7 as it reported an overview of the same study, detailed in other included publications.22,23,25 With the exception of Jones et al20,21 all studies were single site. Three papers reported on work conducted within the United Kingdom (UK),6,20,21 three reported Australian data22,23,25 and one reported findings from a study conducted in the United States.24

**Table 1: Summary of included studies**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Authors** | **Study design** | **Sample**  | **Intervention** | **Outcome measures** | **Key findings**  |
| Jones et al 2003 | Three centre Block RCT  | Ventilated ICU patients >48 hours (n=126)   | 93 page self help rehabilitation manual  | * 8 weeks and 6 months:
* Anxiety and depression
* Phobic symptoms
* PTSD related symptoms
* SFHS-36
* Memory
 | * Improved physical function (p=0.006).
* Trend to lower depression (12% vs 25%)
* No difference in anxiety (p=0.71)
* Reduced PTSD symptoms at 8 weeks (p=0.026), but not 6 months
 |
| Jones et al 2004 | Three centre Block RCT | Family members of recovering ICU patients (n=90) | 93 page self help rehabilitation manual | * 8 weeks and 6 months:
* Anxiety and depression
* PTSD related symptoms
 | * High incidence of PTSD related symptoms in both groups (49%)
* No difference in depression (p=0.25), anxiety (p=0.34) or PTSD symptoms (p=0.20)
 |
| Paul et al. 2004 | Single centre action research study using semi-structured interviews  |  ICU patients (n=7)Relatives (n=11) | Written information booklet | * Post ICU discharge on ward:
* Comments/ suggestions regarding booklet
 | * Mixed views on usefulness and satisfaction
* More specific information wanted by some
* Valued diary pages
 |
| Mitchell and Courtney 2004 | Single centre pre-test, post-test control group design  | Relatives of adult ICU patients > 10 hours (n=162) | Structured/ individualized discharge information  | * After transfer to ward:
* Uncertainty in illness
* State anxiety
 | * Less uncertainty in illness (p=0.029).
* No difference in state anxiety
 |
| Mitchell and Courtney 2005b | Single centre quasi-experimental comparative design using a ten item questionnaire | Relatives of adult ICU patients > 10 hours (n=162)  | Structured/ individualized discharge information | * After transfer to ward:
* Satisfaction and perceptions of understanding
* Levels of concern
 | * Greater satisfaction (p=0.015)
* Better understanding (p=0.002),
* Better prepared (p=0.001),
* Less worried (p=0.024)
* More informed (p<0.0001)
 |
| Mitchell and Courtney 2005c | Single centre evaluation study using a nine item questionnaire | ICU nurses involved in transfer of ICU patients to ward (n=33) | Structured/ individualized discharge information | * Eight-eleven weeks post intervention:
* Perceptions of usefulness
 | * 95% (n=31) stated it to be a ‘useful’ intervention and would recommend further use
* Aided discussion with relatives (87.8%, n=29) and patients (75.8%,n=25)
 |
| Kitchens 2009 | Single centre quasi- experimental design (pre test, post test) | Family members (n=20) of patients transferred from ICU | Transfer brochure combined with verbal information  | * Transfer knowledge
* Transfer anxiety
 | 1. Reduced levels of anxiety (p=0.021)2. Increased transfer knowledge |

**Methodological appraisal**

Overall, only the papers by Jones et al20,21 were methodologically strong (Table 2), however, the RCT on which they report was underpowered. The two papers by Mitchell & Courtney22,23 are of moderate quality (Table 2) as they detail outcomes from a relatively large quasi-experimental study, which makes a comparison between similar groups of relatives receiving different approaches to delivering information. The questionnaire survey by Mitchell & Courtney25 (2005c) also addressed the majority of methodological criteria, although generalizability of findings was limited by the small sample size (n=33). In contrast, the action research study published by Paul et al6 showed significant weaknesses (Table 2). Publication of Kitchen’s before and after study24 was limited to an abstract and so full appraisal was not possible.

**Table 2: Methodological appraisal**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  **Publication****Criteria**  | Jones et al 2003 | Jones et al 2004 | Paul et al 2004 | Mitchell & Courtney 2004  | Mitchell & Courtney 2005a | Mitchell & Courtney 2005b  | Mitchell & Courtney 2005c | Kitchens 2009 |
| Clear research question? | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif |
| Appropriate design? | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif |
| Ethical issues addressed | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | Question_mark.png |
| Acceptable recruitment? | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | Question_mark.png |
| Acceptable randomization  | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | 29.gif | 29.gif | 29.gif | 29.gif | 29.gif | 29.gif |
| Adequate sample size? | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | Question_mark.png |
| Comparable groups?  | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | 29.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | Question_mark.png | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | 29.gif | 29.gif |
| Blinding? | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | 29.gif | 29.gif | 29.gif | 29.gif | 29.gif | 29.gif |
| Acceptable data collection? | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | Question_mark.png |
| Complete data analysis? | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | Question_mark.png | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png |
| Adequate follow up?  | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | Question_mark.png | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | 29.gif | Question_mark.png |
| All confounding variables? | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | Question_mark.png | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | Question_mark.png |
| Appropriate outcomes? | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif |
| Applicable results? | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | Question_mark.png | Question_mark.png | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png |
| Limitations discussed? | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png |
| Service user input in booklet design reported | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png |
| Included in review | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | https://upload.wikimedia.org/wikipedia/commons/thumb/7/73/Orange_x.svg/600px-Orange_x.svg.png | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif | http://www.fireworks4weddings.co.uk/test/wp-content/uploads/2009/11/tick.gif |

**Patient outcomes**

Only the 2003 paper by Jones et al20 reported evidence on physical health outcomes. Their self-help manual (used as part of routine ICU follow up) was associated with improved SF-36 physical function compared to patients receiving routine care (p=0.006).

Two publications addressed psychological benefit of information for patients.6,20 Jones et al were unable to identify any significant difference in anxiety, depression or impact of events scores (used as a measure of post traumatic stress disorder) between groups, however, in their intervention group, impact of events scores were lower (p=0.026) and fewer patients than in the control (p=0.066) had significant levels of depression.20

Paul et al reported an increase in anxiety with the use of an information booklet in one patient,6 which although of uncertain significance, does highlight that benefit for psycho-social outcomes should not be assumed. Their written booklet, used in conjunction with usual ad-hoc verbal information was, however, reported to have increased patients’ knowledge and satisfaction.6

**Family outcomes**

Five papers reported on family member outcomes. Jones et al were unable to demonstrate any psychological benefits for family members from their RCT.21 In contrast, Mitchell & Courtney found that relatives receiving structured information felt more satisfied (p=0.015),23 more prepared for transfer,23 and less uncertain (p=0.029).22,23 However, despite a strong relationship (p=<0.00), this reduction in uncertainty did not translate into a significant reduction in anxiety.23 The limited data published from Kitchens suggests, however, that combined written and verbal information may reduce anxiety (p=0.021).24 Findings also support that relatives receiving structured information feel more knowledgeableand better informed about what is happening, than those who do not. 22,23,24 Paul et al further note that most of their sample felt better supported with the use of a written information booklet.6

**Secondary questions**

Studies examined information delivered during the pre-discharge period,6,22,23,24,25 the early recovery period20,21 or both.6 The exact timing of delivery was not, however, generally reported. In the study by Paul et al patients and relatives, some of who received the booklet before, and some after discharge, are reported to have felt 24-48 hours prior to critical care discharge to be the optimal time for the provision of written discharge information.6 None of the studies reported on the effect of the person providing the information, or the environment in which the information was provided.

All of the papers discussed the use of some form of written information. The impact of memory loss was, however, found to be a potential barrier to effectiveness.6,20 The mixed views on usefulness and satisfaction reported by Paul et al6 further suggest that written information used in isolation is unlikely to be optimal.

The content and format of written information was different in each study. Although all study interventions included information on a range of common psychological, psycho-social and physical problems, the provision of other aspects varied. For example, in contrast to most of the booklets produced,6,22,23,24,25  Jones et al provided no information regarding the transition from ICU, instead focusing on early rehabilitation.20,21

None of the studies addressed the quality of verbal information provision, although in most cases it was implicit that some form of verbal information had been delivered alongside the stated intervention or in an ad-hoc fashion as a control. Where it was explicitly stated that structured verbal information was provided in conjunction with written information22,23,24,25 findings suggest that this may be an effective combination. However, the fidelity of the verbal intervention delivery was not reported.

All of the papers reported some use of personalized information. Patients in the study by Paul et al wanted information more specific to their individual circumstances6. There were also positive views of the diary pages in their booklet. In addition, Jones et al found that their self-help rehabilitation manual was effective in aiding physical recovery.20 These results support the desire for more flexible and individual approaches, which involve the patient and their relatives.

Two papers reported data regarding ICU nurses’ perceptions of the use of a booklet.6,25 In the study by Paul et al some negative comments were reported, for example, one nurse stated that too much information was provided in the booklet, and another that it is the role of the ward nurse to provide information about future or potential problems.6 In contrast, 94% (n=31) of the nurses surveyed by Mitchell & Courtney recommended that the information pack continue to be used after the end of the study.25 No data from the perspective of other health care professionals were reported, leaving their views unknown. Resource issues were not discussed in any of the papers, although Kitchens notes in the conclusion of her abstract that a combination of written and verbal information is cost effective.24 It is unclear, however, whether this is based on data collected during the study.

The authors designed all of the written materials being evaluated. Four papers included information about the extent of service user involvement during this process (Table ?). This varied from the use of previously collected data about identified concerns and problems during this period, to the involvement of service users in reviewing draft materials. None of the papers discussed service user involvement at any other level.

**DISCUSSION AND IMPLICATIONS OF THE EVIDENCE BASE**

The focus of the review was to determine the evidence base surrounding written and/or verbal health information delivery, for adult patients and their relatives upon discharge from critical care to a ward environment. It further aimed to elucidate the extent of service user involvement, an important consideration for the future development of information, focused around service users’ needs and preferences.26

Findings highlight the significant gaps in our current understanding of what constitutes effective critical care discharge information. There is currently no research evidence from which to recommend the use of any approach based on either written or verbal information alone as an adjunct to usual care. Indeed, limited evidence suggests that written information alone may have an adverse effect on satisfaction for relatives. Findings do suggest, however, that well-designed written information booklets, combined with other strategies, may have a beneficial effect on psycho-social well-being for relatives and may aid physical recovery for patients. Our findings support research conducted in other acute and critical care settings identifying the link between information provision and improved psycho-social outcomes.27,28

**What does effective critical care discharge information encompass?**

Despite the lack of clarity regarding how information booklets were developed in some studies, overall findings from this review together with an examination of the content of other published materials3,4,5,7,8,9,10 suggest that for adult critical care patients, information needs at the point of discharge to a ward encompass two key aspects: (1) information to support the discharge process and prepare for life on the ward and (2) information to support ongoing recovery. Some of the studies included in our review focused on information for both periods, whereas others covered only one, making it difficult to evaluate the individual effects of each type of information. Further collaborative research with service users would help to better define what common generic information should be included in all critical care discharge information.

Using written materials to supplement and enhance verbal information delivery by health care staff is most likely to produce positive outcomes.26 The individual effects of each component are, however, difficult to extrapolate as they are usually studied in combination. Further, the nature, quality and quantity of verbal information are commonly not considered, and the impact of verbal discharge information by different health care professionals does not appear to have been studied. Indeed, a systematic review by Paul et al concluded that there is currently no evidence to determine how the quality of information might impact on its effectiveness.29

**Meeting individual needs**

All of the reviewed studies used some form of individualized information, supporting views from the literature that information based upon an assessment of individual need and capability is likely to be more effective than the provision of generic information.11,30,31,32,33 Our findings, and those from studies with other critical care populations further support this view.28,34,35,36,37 In addition, evidence suggests that the development of separate materials for patients and relatives may also be required to meet their differing needs.30

Personalization of information is challenging and is not simply a matter of health professionals determining what an individual should be told.26 One way of identifying and meeting individual needs might be through the provision of opportunities for reflection. Reflection can assist people to recognize the progress they have made38,39 and may in turn help them to identify their own ongoing information needs.The use of diaries (completed by staff) during critical care appears to improve psychological well being post discharge.38,39,40 Extending the use of reflection to the critical care discharge and early recovery period therefore seems a logical step.41

Studies with other patient population groups have attempted to develop tools that enable patients to identify their own information needs.42 Development and evaluation of such tools specifically for critical care patients could prove to be of similar value. Results from an interview study with rehabilitation patients suggests people are both able and willing to express their need for information, despite a number of physical and psychological impairments.43 Such findings emphasize the importance of involving patients as partners in identifying learning needs relevant to their rehabilitation.43 Research evidence highlights the potential for information to contribute meaningfully to shared decision-making during critical illness recovery.20,21,44 Evidence from our review and other literature suggests that, even in the more unwell person, participation strategies are feasible when the right support is offered.45,46,47

**Service user involvement**

Ormandy stresses the importance of defining information, so that health care professionals understand what they need to consider during both its design and delivery.26 Such definitions should be drawn from research seeking the service users’ perspective. Evaluation of interventions informed by service users, which are more likely to produce positive results, can then be undertaken, ensuring scarce resources are wisely used. Ormandy (p.99) defines an information need as: “*a recognition that your knowledge is inadequate to satisfy a goal that you have, within the context/situation that you find yourself at a specific point in the time* ”.26 This implies that in order to meet service users’ information needs, data derived from such individuals is necessary. Although many currently available resources have been developed, to some extent, in conjunction with service users, the risk of materials being biased by professionals determining what information they believe to be necessary remains.26

In this review, service user input was evident in the design of most interventions. However, input was frequently limited to the use of previously collected data regarding former patients’ problems to inform the content of booklets, rather than full inclusion of service users in the design or delivery of their evaluation research, an important omission for producing information likely to meet service user needs.48

**LIMITATIONS**

Our review was limited by the paucity of research evidence available. It sought only published studies, and thus the risk of publication bias must also be considered. Further, methodological appraisal was incomplete for Kitchens as the published material was only available in abstract form.24 Evaluation was undertaken by a single researcher and included a wide range of study designs, many of which would not have met the minimum criteria for inclusion in a traditional systematic review. Inclusion of such material is nevertheless justified, as it is important to evaluate all currently available sources of research evidence, making transparent their relative quality, in order to make recommendations for future research and practice.17,49

**CONCLUSION**

Internationally, evidence evaluating critical care discharge information is scant, in spite of a plethora of literature supporting the importance of ongoing effective communication, and recommendations for an improvement in the continuity of care after critical care.11,12  Many complex and interwoven factors can affect physical and psycho-social health outcomes after discharge from critical care, making it difficult to extrapolate the effects of information giving alone. When the findings from this review are considered together with other research literature, it can be concluded, however, that strategies combining effective verbal and written information focused on individual need, and incorporating opportunities for reflection are most likely to be considered effective from the perspective of service users.

This review is the first of its kind to publish the current position regarding information support during discharge from critical care to the ward. Findings highlight the significant shortcomings in knowledge and understanding of service users’ perspectives and outcomes in this important area. Results will be of value to those responsible for the development of information for this population, and should inform the design of future studies investigating this neglected area of critical care practice.

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**CONFLICT OF INTEREST STATEMENT**

The authors have no conflicts of interest to declare.

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