

# SHARED DECISION-SUPPORT TOOLS IN HOSPITAL EMERGENCY DEPARTMENTS: A SYSTEMATIC REVIEW



**Authors:** Valle Coronado-Vázquez, PhD, Juan Gómez-Salgado, PhD, Javier Cerezo-Espinosa de los Monteros, MD, and Miren Arantzazu García-Colinas, MD, Zaragoza, Spain; Huelva, Spain; Samborondon, Guayaquil, Ecuador; Seville, Spain; and Teruel, Spain

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## Contribution to Emergency Nursing Practice

- The current state of scientific knowledge on shared decision-support tools (SDSTs) indicates that they have been used frequently in the choice of treatment for chronic diseases. However, in emergency departments, this model has not been widely implemented.
- The main finding of this paper is that implementation of SDSTs in emergency departments is limited by physicians' decisions in extreme situations and the pressures due to the limited time available.
- The key implication for emergency nursing practice from this study is the relevance in urgent care pathways in which treatment has a high level of evidence and a complex risk–benefit balance.

## Abstract

**Introduction:** Shared decision making involves both patients and health care professionals working together to choose a certain diagnostic or therapeutic option. To facilitate these decisions, the shared decision-support tools (SDSTs) have been developed to assist in the communication with patients during the hospital pro-

cess. They have been frequently used in the choice of treatment for chronic diseases. However, in emergency departments, this model has not been as widely implemented. For that reason, this article aims to examine, through a systematic review, the effects of SDSTs on patients' hospital care in emergency departments.

**Methods:** The principal databases and repositories were consulted to obtain documents that compared the use of SDSTs with standard care.

**Results:** The main results revealed that the SDSTs helped to significantly improve patients' knowledge of their disease and satisfaction with the care they received, also reducing decision-making conflicts.

**Discussion:** Nevertheless, its implementation is limited by the belief that patients prefer physicians to decide for them and the pressures due to the limited time available. The development of SDSTs is relevant in urgent care pathways in which treatment has a high level of evidence and a complex risk–benefit balance.

**Key words:** Decision support techniques; Emergency service hospital; Shared decision making

Valle Coronado-Vázquez is Directorate General of Healthcare, Aragonese Health Service, Government of Aragón, Zaragoza, Spain.

Juan Gómez-Salgado is in the Nursing Department, University of Huelva, Huelva, Spain, and the Safety and Health Postgraduate Program, Espíritu Santo University, Samborondón (Guayaquil), Ecuador.

Javier Cerezo-Espinosa de los Monteros is a Physician Specialist in Preventive Medicine, Andalusian Agency for Healthcare Quality, Seville, Spain.

Miren Arantzazu García Colinas is Primary Care Pharmacist, Aragonese Health Service, Alcañiz Sector, Government of Aragón, Teruel, Spain.

For correspondence, write: Juan Gómez-Salgado, PhD, Nursing Department, Avenida Tres de Marzo, s/n, 21007 Huelva, Spain; E-mail: [jgsalgado@gmail.com](mailto:jgsalgado@gmail.com).

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## Introduction

The use of shared decisions involves patients and health care professionals working together to choose a certain diagnostic or therapeutic option. It is necessary to provide patients with appropriate information based on scientific evidence and to consider their values and preferences so that—after a process of deliberation—decision making is possible.<sup>1</sup>

Shared decisions are about bringing evidence closer to the clinical decisions, decreasing the overuse of therapies, and increasing its effectiveness. Shared decisions are transferred to clinical practice through a model that includes what Elwyn defines as “choice, option and decision talk.”<sup>2</sup> In the first step, the professional makes sure that patients know that reasonable options are available; in the second step, the professional provides more detailed information

about options; in the third, they support the patient when considering preferences and deciding what is best.

Shared decisions have frequently been used in the choice of treatment for chronic diseases, with which its application has had positive results on patients' knowledge of the disease, also increasing satisfaction with the decisions made.<sup>3,4</sup> Many patients want to be informed and take part in decisions concerning their health.<sup>5</sup> However, in emergency departments, where conditions treated are time-dependent, this model has not been as widely implemented. In a study on ED ethical conflicts, most physicians respected patients' right to information,<sup>6</sup> but—in terms of the amount of information that must be given—only 62.7% would report on the risks of the treatment comprehensively.<sup>7</sup>

Some clinical trials show shared decisions are feasible and that it is desirable that patients are involved in them.<sup>8</sup> To support shared decision-making, various shared decision-support tools (SDSTs) have been developed that serve to inform patients and help them make decisions.<sup>9</sup> The evaluation of these tools' quality is done following the standards established by the IPDAS Collaboration (International Patient Decision Aids Standards), which considers that SDSTs are “interventions developed to help people make decisions, choose between different diagnostic or therapeutic options, while promoting the deliberation between professionals and patients.”<sup>10</sup> These interventions facilitate decision making, reducing the number of indecisive patients and the use of options that are not clearly related to the benefits.<sup>8,11</sup>

In addition, the use of SDSTs with children who have acute conditions presenting to emergency departments is sensitive to the preferences and values of parents. These tools improve patients' knowledge about their care, reducing the input required.<sup>8</sup>

There are many validated tools to assist decision making for different care pathways such as those specific for cancer, kidney disease, and others. However, few have been developed for their use in the emergency department. In this systematic review, the use of SDSTs in hospital emergency departments was analyzed.

## Methods

### DESIGN

A systematic review of the literature was carried out following the methodology proposed by the Cochrane Collaboration. The objective is to examine the effects of the SDST in the interventions on patients treated in

emergency departments of hospitals and, secondly, to analyze the conditions in which SDSTs were used, referring to the attitude shown by the patients toward their use.

### STUDY ELIGIBILITY CRITERIA (PICOS)

- **Population:** Patients of all ages seen in hospital emergency departments with any clinical conditions that need immediate attention; critical situations of evident danger for the life of the patient and that need immediate action were excluded.
- **Intervention:** Use of SDSTs for selecting diagnostic tests and treatment.
- **Comparator:** Standard care.
- **Outcomes:** Knowledge about condition; involvement in treatment.
- **Study design:** Systematic review of randomized controlled trials; studies published in languages other than English or Spanish were excluded.

### SEARCH STRATEGY

The search strategy was developed by researchers with expertise in SDSTs. The search was performed in the following databases: Medline through Pubmed, Cochrane Library, Embase, Web of Science, and CUIDEN. It included studies published from January 2012, to September 2018.

The search was designed using the following MESH terms: Emergency Service Hospital and Decision Support Techniques.

The search strategy in Pubmed was: “Decision Support Techniques”[Mesh] AND “Emergency Medical Services” [Mesh] AND (Clinical Trial [ptyp] AND (“2012/01/01”[PDAT]: “2018/09/15”[PDAT])).

In the rest of the databases, the following free-search terms were used: Emergency Service Hospital AND Decision Support Techniques. The following filters were applied: controlled trials and publication dates from 01/01/2012 to 15/09/2018.

### INCLUSION AND EXCLUSION CRITERIA

Studies meeting the following criteria were selected: randomized and controlled clinical trials in which the intervention was the use of SDSTs in hospital emergency departments, for decisions on diagnosis and on treatment, using as a comparison the usual care with any type of patient.

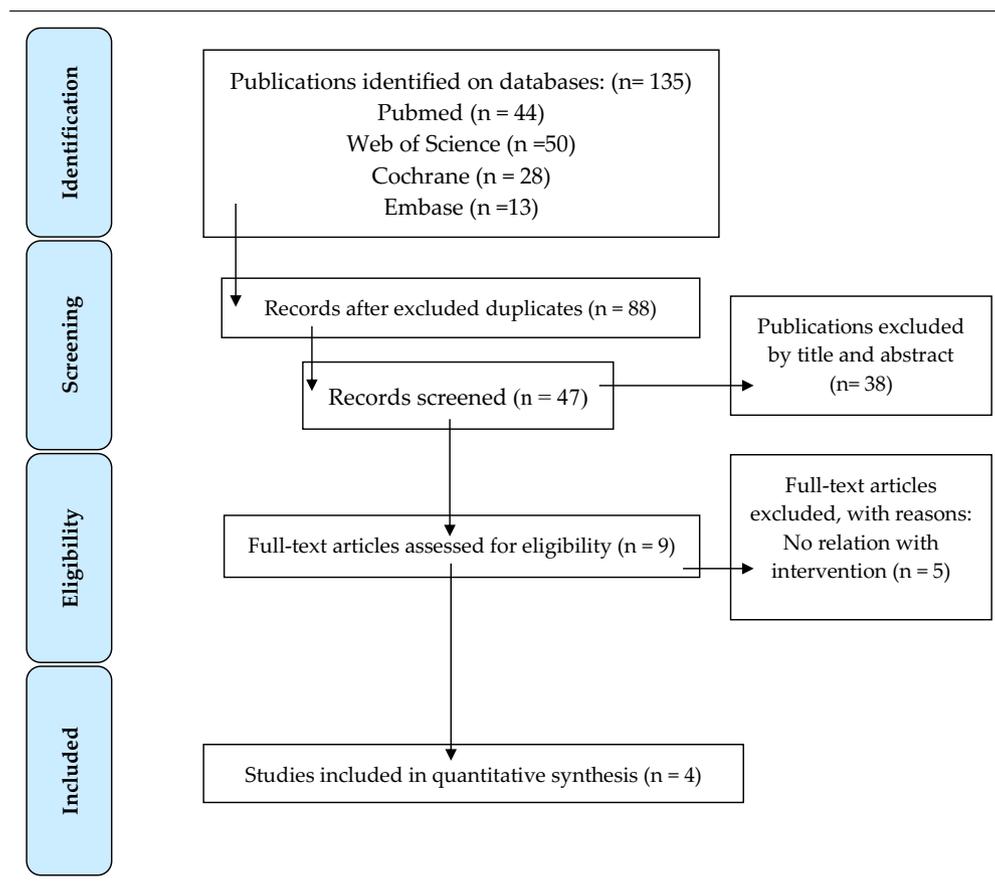


FIGURE  
Flow diagram.

All studies published in languages other than Spanish or English, study protocols, and those reporting partial results were excluded.

## RESULTS OF THE SEARCH

During the selection process, 2 reviewers examined titles and abstracts of identified studies to choose those that met the inclusion criteria. Any discrepancies were resolved through consensus.

A total number of 135 papers were found, of which 88 were excluded for being duplicates; 38 papers were excluded after reading titles and abstracts, as they did not meet inclusion criteria. Nine papers were selected for full text review. Finally, 4 clinical trials were selected (Figure). After checking reference lists, no additional studies were found. Although these findings are based on only 4 studies, all together they do have  $N = 2,237$  patients.

After reading the papers, the following data were extracted: type of study, year, number of participants, demographic characteristics, type of intervention, and main findings.

## QUALITY OF SELECTED STUDIES

The quality of the selected studies was assessed using the Jadad scale. The Jadad scale (Oxford quality scoring system) is a 1-5 Likert-type scale that considers those aspects related to the biases in terms of randomization, masking, and loss of follow-up. A score of less than 3 was considered to be low-quality. Only 1 clinical trial was considered to be of high quality.

## DATA SYNTHESIS

As the selected studies measured different variables and used different measuring tools, it was not possible to carry out a meta-analysis. Therefore, we did a synthesis of the evidence

TABLE  
**Characteristics of the studies that analyze the use of SDSTs in hospital emergency departments**

Author/Year/Place	Design/Intervention	Population/Inclusion Criteria	Measured Variables	Results	Study Quality
Hess et al <sup>12</sup> 2012 United States	CT IG: SDST shared decisions. CG: usual care.	204 patients with chest pain and low risk of ACS.	Patients' knowledge and commitment.	IG: Higher level of knowledge and commitment to decisions.	Jadad 2/5
Hess et al <sup>13</sup> 2016 United States	CT IG: SDST facilitated shared decisions. CG. Usual care.	898 patients with chest pain waiting for admission to observation unit.	Knowledge of ACS risk and care options.	IG: Greater knowledge of ACS risk and care options. Greater involvement in decisions.	Jadad 4/5
Geurts et al <sup>15</sup> 2017 Netherlands	CT on effectiveness of SDST used by nurses for rehydration of children with acute gastroenteritis.	222 children between 1 and 5 years of age with acute gastroenteritis.	Nurses' degree of commitment. Level of standardization in the use of oral rehydration solutions.	Intervention improves nurses' commitment and spreads the standardized use of oral rehydration solutions.	Jadad 1/5
Schaffer et al <sup>14</sup> 2017 United States	CT on SDST effectiveness and structured risk assessment using a quantitative pretest probability web tool. CG. Usual care.	913 adults (>17 years of age) attending the ED with a chief complaint of chest pain and who were being assisted by the treating clinician of the observation unit admission for cardiac stress testing or CCTA.	Length of time in the ED and observation unit, ED visits, office visits, hospitalizations, testing, imaging, and procedures.	During the index ED visit, the mean number of imaging studies was lower in the CPC arm. In the 45 days following the ED visit, patients randomized to CPC generally underwent fewer tests.	Jadad 2/5

ACS, acute coronary syndrome; CCTA, coronary computed tomography angiography; CG, control group; CPC, chest pain choice; CT, clinical trial; ED, emergency department; IG, intervention group.

available. A review of the qualitative aspects of the main studies included was performed.

## Results

### STUDY CHARACTERISTICS

The [Table](#) shows the main characteristics of the selected studies. Three of them were carried out in the United States<sup>12-14</sup> and one in Europe.<sup>15</sup>

In the 3 clinical trials, the number of participants was 2,237. The intervention was compared with the standard care.

### PARTICIPANTS' CHARACTERISTICS

In all cases, they were patients who had attended a hospital emergency department with illness. Most of the participants were adults older than 17 years of age, with low-risk chest pain.<sup>13</sup> In the study by Geurts et al,<sup>15</sup> the participants were children from 1 month to 5 years of age with acute gastroenteritis and other conditions such as diarrhea and vomiting.

### INTERVENTION CHARACTERISTICS

Different SDSTs were used to carry out the interventions: a tool to predict the risk of a cardiac event in the following 45 days after the chest pain episode,<sup>12,13</sup> an electronic tool in an easily accessible support system to be used with parents,<sup>15</sup> and a tool to measure health care performance both during the initial ED visit and in the subsequent 45 days.<sup>14</sup>

SDSTs have been presented in different formats: a risk communication pictograph<sup>12,13</sup> and an electronic SDST available at the emergency professionals' computer.<sup>15</sup>

For the correct implementation of SDSTs, clinicians were oriented during a 1-hour training session given by the lead investigator as well as a brief demonstration from the study coordinator on how to use the decision aid—performed just before applying SDST to patients—a process that had shown better results.<sup>12,13</sup> In another study, group talks were organized with the emergency nurses at the start of their working days, with the support of continued informative meetings and reminders through posters, e-mails, and newsletters.<sup>15</sup>

The intervention was conducted by emergency nursing professionals,<sup>15</sup> emergency physicians, and chest pain unit physicians.<sup>12-14</sup> The control group in the clinical trials received standard care without an option to use SDST.

### VARIABLES ANALYZED

The most frequently analyzed results were patients' knowledge about their disease, the level of decisional conflict experienced by patients, the commitment of professionals and patients to the decisions, and their satisfaction with SDSTs. The clinical variables were related to the rate of admissions for medical or surgical interventions and with the emergence of major cardiac events, length of time in the emergency department and observation unit, ED visits, office visits, hospitalizations, testing, imaging, and procedures. Characteristics and main results of the study are summarized in the [Table](#), where the risk of bias is also included.

The knowledge of the disease and the satisfaction with care received significantly improved in patients when SDSTs were used, also reducing decision-making conflicts.<sup>12,13</sup> These patients showed increased satisfaction with SDSTs, although the differences with the group that received standard care were not significant.<sup>13</sup>

Ninety-eight percent of clinicians considered SDSTs to be very useful.<sup>12</sup> The average length of discussions with patients was 1.3 minutes longer in the intervention group.<sup>13</sup>

The use of cardiac stress tests in adult patients with low-risk chest pain was significantly lower in those for whom SDSTs had been adopted, and the mean number of tests was lower in the SDST group (a decrease in 19.4 imaging studies per 100 patients, 95% confidence interval [CI], 15.5-23.3).<sup>12,13</sup>

When evaluating the entire intervention and follow-up period, there were fewer advanced cardiac imaging tests completed in the intervention group (25.8 less per 100 patients (95% CI, 3.74-47.9)).<sup>14</sup> In children, the implementation of SDSTs increased the commitment of emergency nurses to giving advice on the treatment of rehydration in patients with acute gastroenteritis. The use of oral rehydration solutions was also greater in the intervention group.<sup>15</sup> There was no difference in the length of stay in the emergency department, in the use of diagnostic tests,<sup>15</sup> or in the frequency of observation unit admissions.<sup>14</sup>

## Discussion

Shared decision making is carried out when there are several diagnosis or treatment options without a clear preference for one of them, a frequent event in emergency departments. In fact, in a study in which the perceptions of emergency physicians are analyzed, several possibilities of intervention in up to 56% of attended problems are considered, and, in these situations, 58% of the cases are solved by shared decision making.<sup>16</sup>

Nevertheless, this model presents some barriers for its implementation in the emergency department. These include the belief that patients prefer physicians to decide for them and the pressures due to the limited time available in emergency departments.<sup>16,17</sup>

Regarding the first barrier mentioned, ED professionals considered that patients' passive attitude toward decision making limit the use of SDSTs.<sup>10</sup> However, with respect to the lack of time for consultation, a study conducted with patients who had suffered strokes—in which the time frame for the effective start of thrombolytic therapy is limited—showed that most patients prefer to take part in decisions and understand the risks and benefits of the treatment.<sup>18</sup>

Several SDSTs have been developed to be used in emergency departments, such as those designed to determine the risk of cardiac events in chest pain or to decide about performing diagnostic imaging in children with head injuries.<sup>12,19</sup> Use of SDSTs in low-risk chest pain is one of the most studied, and it has proved to decrease the number of stress tests administered, but there is no evidence of its effectiveness in terms of clinical outcomes such as the rate of revascularisation.<sup>13</sup> In this group of patients, a decrease in hospital admissions has been proved, as well as in the resources used and the performance of diagnostic tests.<sup>20</sup>

Other tools have been used to support the decisions of thrombolysis in stroke, but most of them present deficiencies in their design.<sup>21</sup> The effectiveness of SDSTs also depends on the type of format chosen for its presentation, which will vary according to the population to which the tools are aimed. Graphical methods are not frequently used to convey probabilistic information despite evidence that they can enhance perception of risk by exploiting prompt perceptual capabilities of users. It is recommended that health information materials should be written to be understood by the majority of the population.<sup>22</sup>

Few studies analyze the ideal format type. In a published article, it was found that, in the emergency department, information presented to elderly patients in video format can be effective to improve their knowledge and their confidence in treatment.<sup>23</sup> More studies should be developed to determine the best SDST format in emergency departments, considering the views of patients, families, and clinicians.

Computer-based tools, however, show limited usefulness in this population group.<sup>24</sup> Coaching methods have also been employed to prepare patients for clinical discussions, but the study of these methods must be developed further to include emergency departments.<sup>25</sup>

These SDST designs should be done in consideration of the actual situations to which they will be applied, using

iterative processes that are not only evidence based but also patient-centered.<sup>26</sup> These tools could have an impact on the differences in provision of care, as they improve knowledge and involvement of patients in decision making. Therefore, the development of SDSTs should involve representatives of the most vulnerable population groups and should consider socioeconomic differences.<sup>27</sup>

The application of SDSTs in hospital emergency departments has proved to effectively improve the knowledge of patients about their illnesses as well as their commitment to treatment. They have also increased professionals' willingness to give advice to patients. However, the role played by SDSTs on clinical outcomes is uncertain owing to the low number and low quality of published studies. Therefore, SDSTs must be developed and validated for their use in hospital emergency departments as well as for other pathways, considering the characteristics of the patients to whom they are aimed and by analyzing the benefits of their use.

More quality studies that examine the effectiveness of SDSTs in emergency processes are needed. The clinical practice guidelines, which are widely used in emergency departments, could serve as support for the development of new SDSTs, providing proven scientific evidence to improve their quality.

In future research, it would be interesting to know the evolution of the results found in this review in the medium and long term through longitudinal studies that further deepen the knowledge of the barriers that prevent the effective use of these types of tools in the field of emergencies and also allow us to know how to overcome barriers.<sup>27,28</sup> In addition, ways to minimize the required time to administer the tools in real-world contexts are needed, as well as identifying factors that affect the acceptability of the use of SDSTs by health professionals in emergency departments. The process should be carried out by investigating the use of SDSTs in patients with different profiles of disease severity, raising awareness of the impact of this working model on health care costs. Furthermore, the role that the patients' literacy levels may play should be analyzed—as well as the role played by their companions—to provide additional information to family members. Finally, it would be valuable to deepen the effects of SDSTs on patient safety in emergency departments.

## Limitations

The main limitation of this review is the low number of publications on the use of SDSTs in emergency departments. In the 3 clinical trials, both the selection criteria of participants and the randomization sequence and statistical

analysis are assessed. However, although the randomization of allocating participants is blind, this is not the case for the evaluation, which is relevant when the measures used are subjective. An intention-to-treat analysis is not carried out, but the confidence intervals are calculated. In one of the clinical trials, the external validity can be limited by having been carried out in a single center,<sup>12</sup> and in another one, the use of 2 versions of SDSTs implies a certain degree of heterogeneity.<sup>13</sup>

### Implications for Emergency Nursing Practice

SDSTs in hospital emergency departments have proved effective to increase the knowledge of patients about their illnesses as well as their commitment to treatment. They have also increased professionals' willingness to give advice to patients.

It is necessary to develop and validate these tools for use in these services, with consideration given to the characteristics of the patients to whom they are aimed.

An understanding of shared decision making as a comprehensive and integrated process would facilitate their using in practice and research as well as the development of educational programs for nurses and other health care providers.

### Conclusions

SDSTs in hospital emergency departments have proved to effectively increase the knowledge of patients about their illness as well as their commitment to treatment. They have also increased professionals' willingness to give advice to patients. However, the role played by SDSTs on clinical outcomes is uncertain, owing to the low number and low quality of published studies. SDSTs must be developed and validated for use in hospital emergency departments, with consideration being given to the characteristics of the patients to whom they are aimed.

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