

# Spanish primary care in pediatric trauma (AITP) consensus: An AITP checklist

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## ABSTRACT

**Introduction.** The course in Primary Care in Pediatric Trauma (AITP in Spanish) has been taught in Spain since 1997, and there are currently 9 accredited training centers. Care of polytraumatized pediatric patients often takes place in an environment conducive to errors resulting from forgetfulness, which is why checklists - mnemonic tools widely used in industry and medicine - are particularly useful to avoid such errors. Although several checklists exist for pediatric trauma care, none have been developed within the setting of our course.

**Materials and methods.** The criteria for being selected as an expert in Primary Care in Pediatric Trauma were agreed upon with the scientific polytrauma committee of the Spanish Pediatric Surgery Society. The items that make up the checklist were obtained from a review of the literature and consultation with selected experts, using the Delphi Technique.

**Results.** 10 experts representing the 9 groups or training centers in Primary Care in Pediatric Trauma were selected, and a 28-item checklist was drawn up in accordance with their design recommendations.

**Conclusions.** With the consensus of all the groups, a checklist for the treatment of polytraumatized pediatric patients was drawn up using the Delphi Technique, an essential requirement for the dissemination of this checklist, which should be adapted and validated for use in each healthcare center.

**KEY WORDS:** Checklist; Delphi technique; Advanced Trauma Life Support Care; Pediatrics.

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## CONSENSO AITP ESPAÑOL: UNA LISTA DE VERIFICACIÓN AITP

### RESUMEN

**Introducción.** El curso de Asistencia Inicial al Trauma Pediátrico se imparte en España desde 1997, existiendo en la actualidad 9 centros formadores acreditados. La asistencia al paciente pediátrico politraumatizado se produce muchas veces en un ambiente proclive al error por olvido, por lo que las listas de verificación, como herramientas mnemotécnicas de amplia difusión en la industria y en medicina, serían especialmente útiles para evitarlos. Aunque existen varias listas de verificación para la asistencia al traumatismo pediátrico, ninguna se ha desarrollado en el entorno de nuestro curso.

**Material y métodos.** Se acordaron los criterios para ser seleccionado como experto en Asistencia Inicial al Trauma Pediátrico con la comisión científica de politrauma de la Sociedad Española de Cirugía Pediátrica. Los ítems para formar la lista de verificación se obtuvieron a partir de una revisión bibliográfica y de la consulta a los expertos seleccionados, empleando un método Delphi.

**Resultados.** Se seleccionaron 10 expertos que representan los 9 grupos o centros formadores en Asistencia Inicial al Trauma Pediátrico y se elaboró una lista de verificación con 28 ítems, siguiendo sus recomendaciones de diseño.

**Conclusiones.** Se diseñó una lista de verificación para el manejo del paciente pediátrico politraumatizado, con el consenso de todos los grupos empleando un método Delphi, requisito fundamental para facilitar la difusión de esta lista. Sería preciso adaptar y validar dicha lista para su uso en cada centro asistencial.

**PALABRAS CLAVE:** Lista de verificación; Método Delphi; Atención de Soporte Vital Avanzado en Trauma; Pediatría.

## INTRODUCTION

Dr. Alberto Iñón designed the course on primary care in pediatric trauma (AITP in Spanish) in Argentina, and

it was first held in 1991<sup>(1)</sup>. The AITP course was launched in Spain by Dr. Juan Vázquez Estévez and was first held at Gregorio Marañón Hospital in Madrid in 1997<sup>(2,3)</sup>. The AITP course is based on a totally pediatric adaptation of the ATLS (Advanced Trauma Life Support) course, designed by Dr. Styner in the USA in 1980 and widely disseminated throughout the world. ATLS has been taught in Spain since 2000<sup>(4)</sup>, but its use in the Spanish pediatric field is very limited.

Over the past 25 years, AITP courses have been held in numerous locations in Spain. The course is sponsored by the Spanish Pediatric Surgery Society (SECP). The AITP and Advanced Life Support in Pediatric Trauma (SVATP) courses are the ones with the largest number of students in the Spanish pediatric field.

The various AITP training groups created the Spanish Pediatric Trauma Group, currently represented in the SECP in the pediatric trauma scientific committee<sup>(5)</sup>.

Care of polytraumatized patients is particularly difficult and can result in the perfect situation for medical error: a seriously injured patient for whom rapid decisions must be made with little information available; the possibility of multiple victims; and occurrence at untimely hours when there is little staff with treatment experience available.

Forgetfulness of the ATLS procedure has been assessed, and it has been observed that there is already a significant loss of the knowledge acquired six months after having received the ATLS course. The maximum loss of knowledge is reached after two years, but the most basic elements of the procedure are remembered for at least 8 years<sup>(6,7)</sup>.

The quality of the primary care provided to polytraumatized pediatric patients after the implementation of an AITP training program has been reviewed. An increasing number of patients are being treated in non-specialized centers, and the severity of patient injuries is lower. In addition, although highly significant improvements were observed after the AITP training program implementation, there was no clear improvement in quality indicators, with the author of the paper proposing that the training courses should be accompanied by other measures, such as checklists, to ensure the proper application of the AITP procedure<sup>(8)</sup>.

Checklists (CL), which are widely used in industry and medicine, are particularly useful when rapid and systematic decision making is required in critical, complex, and stressful situations<sup>(9)</sup>. To increase and improve the dissemination of a CL, it is recommended that future users be involved in its design<sup>(9,10)</sup>. There are several recommendations for the design of a CL in medicine, the most important of which are those of Hales<sup>(9)</sup> and Burian<sup>(11)</sup>, since they cover the phases of the analysis of needs, as well as the criteria and guidelines to be followed for design and implementation.

The Delphi method was designed by the Rand Corporation in the 1950s, commissioned by the U.S. Air Force, with the intention of providing a well-structured method for obtaining group information for forecasting events in

an environment of uncertainty, using experts in a given field. This method can also be used for the purpose of generating consensus, which is the most common objective in medicine<sup>(12-14)</sup>.

The objective of our research was to draw up a CL for the treatment of polytraumatized pediatric patients by means of a consensus of all the AITP groups in Spain.

## MATERIALS AND METHODS

A Delphi method for consultation with experts was used for the selection and design of the AITP CL.

The criteria used to determine whether someone should be considered an expert in AITP, agreed upon with the SECP pediatric trauma scientific committee, were as follows: AITP certification; having taught in at least three AITP courses; being the director of or having directed or co-directed at least two AITP courses; and providing care services in a clinical unit that treats polytraumatized patients.

The participating experts were chosen from among the currently active AITP groups.

The 31 items assessed by the experts were previously obtained through a review of the literature carried out by the coordinator and considering the suggestions of the experts themselves.

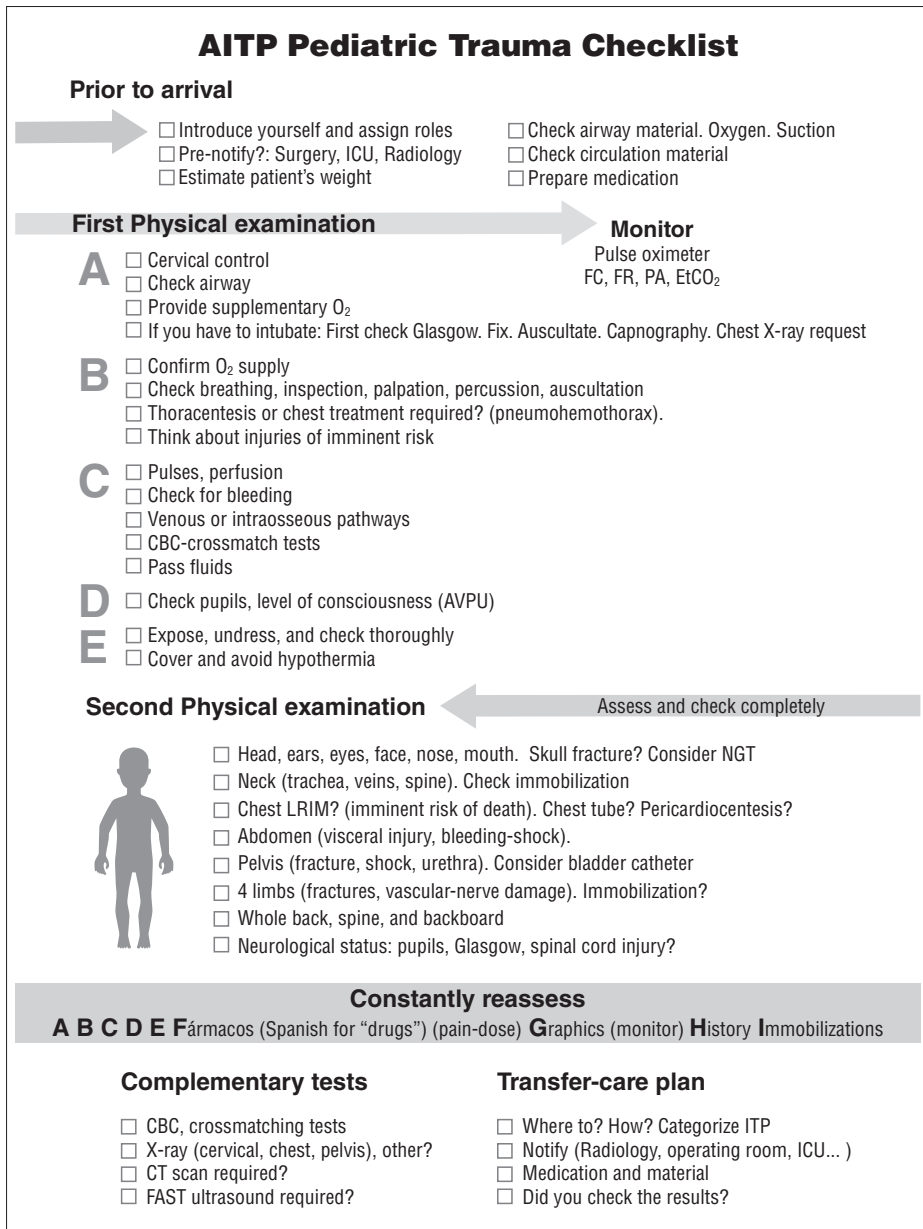
The different phases of the Delphi process were carried out by means of e-mail and digital forms. The entire process was carried out anonymously among the experts, in such a way that only the coordinator knew the origin of each expert's ratings.

The Delphi method used consisted of one quantitative round and two qualitative rounds of contact with the experts. The contact rounds were concluded once the statistical stability of the experts' ratings had been reached. The selection of items was carried out with statistical criteria established in advance.

## RESULTS

The consensus generation process involved all current AITP training centers in Spain, belonging to 9 Spanish hospitals –Hospital Materno Infantil Teresa Herrera (A Coruña), Hospital Vall d'Hebron (Barcelona), Hospital Son Espases (Palma), Hospital La Fe (Valencia), Hospital General de Albacete, Hospital Torrecárdenas (Almería), Hospital Infantil La Paz (Madrid), Hospital 12 de Octubre (Madrid), Hospital Gregorio Marañón (Madrid). The 10 individuals chosen to form the group of experts participated in all the rating phases, both quantitative and qualitative.

28 of the 31 items initially proposed were selected by statistical consensus and, following the design recommendations suggested by the participating experts and those



**Figure 1.** AITP Pediatric Trauma Checklist<sup>(29)</sup>. Licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International.

available in the literature, the AITP CL was designed (Fig. 1).

This CL consists of four separate blocks, which respect the organization of the typical AITP care process: pre-treatment; first physical examination; second physical examination; and care-transfer plan.

The CL design includes: the need for monitoring; continuous reassessment, adding the letters F (*fármacos* – drugs in Spanish), G (graphics), H (history), and I (immobilizations) to the basic primary care acronym –ABCDE– along with a reminder-suggestion for the performance of complementary tests.

A silhouette of the patient was included with the dual purpose of facilitating note-taking by body zones and reinforcing the idea of the overall patient examination.

Once the CL had been designed, with the items and format chosen by the experts, it was finally sent to all the experts, who stated that they were satisfied with the end result of the consensus-generating process.

## DISCUSSION

The AITP approach already included a mnemonic aid designed by its creator, Dr. Iñón: MATRAP, an acronym standing for *Metro de Atención al Traumatismo Pediátrico* (Pediatric Trauma Care Measure, in Spanish), a plasticized and flexible strip that, by means of a size-weight correlation, made it possible to estimate the different doses of medication required for the resuscitation of polytrau-

matized pediatric patients, establish measure resuscitation materials, and remember the procedure at times of stress<sup>(15)</sup>.

The World Health Organization (WHO) published a CL for the treatment of trauma, but it is not an exclusively pediatric list<sup>(16)</sup>. This CL has a very elementary design, in accordance with the WHO minimum recommendations for polytraumatized pediatric patients' care<sup>(17)</sup> and the Essential Trauma Care Project guidelines<sup>(18)</sup>, and is structured around three points in the process (after the first and second physical examinations, and before patient transfer).

Our CL is not the first one in the world designed for the treatment of polytraumatized pediatric patients. There are other previous examples within the ATLS procedure, such as those designed by the Parsons-Kelleher group<sup>(19,20)</sup> and the Hulfish group<sup>(21)</sup>, which is a local modification of the one previously designed by Parsons-Kelleher. These CLs were drawn up using a modified Delphi methodology, with the groups employing their own hospital staff as experts. These lists are designed in accordance with the ATLS procedure, also observing four moments in the care process (pre-treatment, first physical examination, second physical examination, and care-transfer plan). The care centers where these CLs were developed are leading certified pediatric trauma centers –Children's (Washington) and Nemours/Alfred I. DuPont Hospital for Children (Wilmington, Delaware), where about 600 and 1,000 polytraumatized pediatric patients are treated per year, respectively, and where all medical personnel involved are specialized in ATLS. These care and training conditions are radically different from those at Spanish healthcare centers, where there are no certified pediatric trauma centers and not all the personnel treating the patients have received certified polytrauma training.

In Spain, there is a proposed CL from the SVATP course<sup>(22)</sup>, which seems to have been designed by combining several task lists from the SVATP course handbook<sup>(23,24)</sup>. This list is more of a treatment guide than a CL, since it includes multiple items and describes numerous healthcare measures. The existing publications make no mention of the systematic approach followed for its design, and to the best of our knowledge, it is not currently being used in any healthcare center in Spain.

There is no clear consensus on what it means to be an expert in a given subject, and indeed, the experts finally selected could have been others if the criteria used had been different. Landeta<sup>(25)</sup> considers that there are three main types of experts: specialists in the field, those concerned (who may not have above-average knowledge but are directly involved), and facilitators (those with the ability to synthesize, stimulate, and organize). Our experts were selected based on their ability to fulfill these three criteria, with the aim of facilitating the dissemination of the CL among the training centers and their AITP trainees, so

that it can subsequently be extended to all centers where polytraumatized pediatric patients are treated.

Hales<sup>(9)</sup> and Schmutz<sup>(10)</sup> published several guidelines for the correct design of a CL, recommending the use of updated literature and the participation of experts in the field. Both advocate subsequent local validation of the CL, adapting it to the local environment and training personnel in its use. We believe that, following these recommendations, this CL should be adapted to each of the centers that wish to use it, which should validate it in their specific environment (ideally in a simulation environment), and then implement it with the support of a training program for the end users<sup>(26-28)</sup>.

The layout of the CL is vertical because it is intended for use in printed format, but in the event that it is to be used on computer screens, we suggest changing it to a horizontal orientation.

A CL has been designed for the management of polytraumatized pediatric patients, using the Delphi method, within the AITP care and training system.

The participation of all the AITP training groups in Spain ensures that there is consensus within the AITP Spain group, an essential requirement to facilitate the dissemination of the list.

The CL should be adapted and validated for use in each healthcare center.

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