ESPGHAN/ESPEN/ESPR/CSPEN guidelines on pediatric parenteral nutrition: Guideline development process for the updated guidelines

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A R T I C L E   I N F O
Article history:
Received 29 May 2018
Accepted 29 May 2018

1. Background
In 2005, Guidelines on Paediatric Parenteral Nutrition of the European Society of Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) and the European Society for Clinical Nutrition and Metabolism (ESPEN), supported by the European Society of Paediatric Research (ESPR) were published [1]. The current...
2. Criteria for considering studies for this guideline

Studies had to have direct relevance to the specific issue covered in the given chapter to be included in the guideline. Studies investigating children (aged 0–18 years) were eligible for inclusion (except for chapter 10 where no age limit was imposed). No restriction was made according to study type or the quality of information.

3. Search methods and selection of studies

A systematic literature search was conducted for each chapter. The Ovid Medline database was searched using a search strategy with both MESH terms and text words; the search was in the form [terms for parenteral nutrition] and [terms for the specific topic of the given chapter] limited to Children (aged 0–18 years) and to years “2004-Current”. An exception was made in the case of Chapter 10 (terms for PN were not used) and Chapter 14 (a slightly different structure was used because of the broad topic of the chapter). The search strategy for each Chapter can be found at the start of each chapter. Most of the chapters attempted to identify all relevant trials regardless of language. However, in the case of chapters 7, 10 and 11 results were limited to studies written in English. Since this is an update of the PN guideline published in 2005, the electronic search was limited to studies published between 2004 and December 2014, the date when searches were conducted. Studies published before 2004 were included from the previous guideline. In parallel, experts conducted searches independently from the main search, using other, more specific search terms specific to the given chapter. For each individual guideline, the time frame of the individual literature search is given.

Titles and abstracts were screened by at least two authors from each chapter writing group independently to assess their eligibility for inclusion in the chapter. In cases with a large number of titles a preliminary screening was conducted by a single independent reviewer and titles that were obviously irrelevant were removed from the title list. Full-texts of articles that were deemed potentially relevant to the chapter were retrieved for further assessment. Decision on inclusion was reached by consensus among the authors of the chapter.


The GRADE approach was used to assess the quality of evidence and to interpret findings. Authors of the individual chapters independently extracted data on methods, types of participants, interventions, and outcomes from the selected trials and then evaluated the level of evidence (LOE) and grade of recommendation (GOR). The SIGN classification was used to assign both the evidence level and the recommendation grade. The scales used to evaluate LOE and GOR are summarized in Tables 1 and 2. Apart from the

Table 1
Rating scheme for the strength of the evidence [2].

<table>
<thead>
<tr>
<th>Level of Evidence (LOE)</th>
<th>Type of evidence</th>
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<tbody>
<tr>
<td>1++</td>
<td>High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias</td>
</tr>
<tr>
<td>1+</td>
<td>Well conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias</td>
</tr>
<tr>
<td>1−</td>
<td>Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias</td>
</tr>
<tr>
<td>2++</td>
<td>High quality systematic reviews of case control or cohort studies. High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal</td>
</tr>
<tr>
<td>2+</td>
<td>Well conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal</td>
</tr>
<tr>
<td>2−</td>
<td>Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal</td>
</tr>
<tr>
<td>3</td>
<td>Non-analytic studies, e.g., case reports, case series</td>
</tr>
<tr>
<td>4</td>
<td>Expert opinion</td>
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classical three class grading (A/B/0) the category ‘Good practice points’ (GPP) was also offered by this grading system (Table 2), enabling authors to make expert recommendations based on their experience for clinically relevant questions which are not covered by appropriate trials. In addition, a text recommendation (Table 3) was also formulated to give a potentially more definitive recommendation for guideline users; experts were instructed to focus on the recommendations ‘Conditional recommendation for’ and ‘Strong recommendation for’.

5. Achievement of consensus

One to three rounds of online voting using the software SurveyMonkey (SurveyMonkey Europe, 2 Shelbourne Buildings, 2nd Floor, Shelbourne Road, Ballsbridge, Dublin 4, Ireland) were performed with each individual guideline to achieve consensus within all participants of the working group. The first round took place after finalization of each individual guideline by the individual group of authors. The feedback from online voting and its corresponding online discussion were used to modify and improve the initial recommendations in order to reach the highest degree of acceptance at the final (second or third) online voting. This process of modification lasted in individual guidelines till the end of 2017. The level of the strength of consensus is given with each individual recommendation (Table 4).

Conflict of interest
None declared.

References
