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Bárbara Augusta Alves Vaz  
Review of psycho-educational  
interventions in children with autism  
spectrum disorder

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Eu, Bárbara Augusta Alves Vaz, abaixo assinado, nº mecanográfico 201008286, estudante do 6º ano do Ciclo de Estudos Integrado em Medicina, na Faculdade de Medicina da Universidade do Porto, declaro ter atuado com absoluta integridade na elaboração deste projeto de opção.

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DATA DE CONCLUSÃO

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Review of psycho-educational interventions in children with autism spectrum disorder

ORIENTADOR

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COORIENTADOR (se aplicável)

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*“The only way to do great work is to love what you do. If you haven’t found it yet, keep looking. Don’t settle. As with all matters of the heart, you’ll now when you find it.”*

Steve Jobs

**Review of psycho-educational interventions in children with autism spectrum disorder**

**Revisão de intervenções psico-educativas em crianças com perturbação do espectro autista**

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## **Review of psycho-educational interventions in children with autism spectrum disorder**

## **Revisão de intervenções psico-educativas em crianças com perturbação do espectro autista**

### **Abstract**

**Introduction:** Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder causing impairments in socialization; verbal and non-verbal communication; and repetitive and restrictive behaviours; whose prevalence is rising. Psycho-educational interventions assess these main impairments, contributing to a more successful development of diagnosed children. The objective of this paper is to describe the different comprehensive psycho-educational interventions, their theoretical basis, practical effectiveness and the importance of this knowledge to health professionals.

**Materials and Methods:** We conducted a literature review to find scientific articles about psycho-educational interventions in children with autism spectrum disorder.

**Results:** These approaches are the most scientifically proven interventions for children with ASD. There are developmental, behavioural and combined approaches. Despite the differences, there are concordant characteristics that guarantee a successful intervention.

**Discussion and Conclusion:** Psycho-educational interventions become difficult to evaluate due to their subjective parameters. Regardless, literature supports that the best option is to combine different approaches. However, there is need in the literature for randomized controlled trials that assess programs/models/interventions that merge all of these understandings, and to develop a clear method that can cover all of the main goals, as well as to raise awareness in health and political decision makers.

## **Resumo**

**Introdução:** A Perturbação do Espectro do Autismo (PEA) é uma perturbação do neuro desenvolvimento, com prejuízo na capacidade de socialização; comunicação verbal e não-verbal; e presença de comportamentos repetitivos e restritivos; cuja prevalência está a aumentar. As intervenções psico-educativas dirigem-se a estas incapacidades, contribuindo para um melhor desenvolvimento das crianças afetadas. O objetivo deste trabalho é descrever as intervenções psico-educativas, a sua base teórica, eficácia e a importância para os profissionais de saúde.

**Materiais e Métodos:** Realizámos uma revisão científica sobre intervenções psico-educativas em crianças com perturbação do espectro do autismo.

**Resultados:** Estas são as intervenções mais comprovadas cientificamente para crianças com PEA. Existem abordagens baseadas no desenvolvimento, no comportamento ou combinadas. Apesar das diferenças, existem características concordantes e que garantem uma intervenção bem-sucedida.

**Discussão e Conclusões:** As intervenções psico-educativas são difíceis de avaliar pelos seus parâmetros subjetivos. Através da análise da literatura, aferimos que a melhor opção é combinar as diferentes abordagens. Contudo há a necessidade de maior investigação e realização de mais estudos randomizados para avaliar as diferentes intervenções e para criar um método que consiga atingir da melhor forma todos os objetivos, tal como aumentar o conhecimento na área por parte dos decisores na área da saúde e política.

## **Keywords**

Autism spectrum disorder, children, psychoeducation, intervention

## Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder, with a probable multifactorial aetiology (1, 2) which may cause significant impairments to those who endure it and also to their close ones. It's characterized by qualitative deficits in: 1) socialization, 2) verbal and nonverbal communication and by 3) restrictive and repetitive behaviours, interests or activities. The damage in social communication and social interaction is manifested by: lack of social-emotional reciprocity, nonverbal communication used for social interaction, developing and maintaining relationships. (3) These features have to be present at early age, usually during the developmental period (12-24 months). (3) However there is a large variability within different patients, which can range from severe mental retardation to normal IQ individuals.(4)

ASD's prevalence has moved towards 1% of the population, in adults as well as in children. (3). It's still unknown if this increase is due to the change in criteria (Diagnostic Statistic Manual of Mental Disorders (DSM) IV to DSM V), which now includes Asperger's syndrome, Pervasive Developmental Disorder not otherwise specified and Autistic disorder per se (3); or if it is due to growing awareness of the disorder or a real increase in the number of cases. This disorder is diagnosed four times more in males than in females, which allows us to hypothesize if this is a result of the female ability to manifest in a more subtle way their social difficulties, remaining unrecognized.(3)

These are not uncommon disorders amongst children. As a result, it is even more important for general practitioners, paediatricians and health professionals to be aware of the symptoms, treatment and management of the disorder, since it causes social impairments that condition their life and integration in civil society. (4)

Although scientific research aiming to develop biomedical treatment for this disorder is being done, it hasn't been discovered an intervention targeting its aetiology. (5) Besides the core deficits, there are also comorbid problems associated with ASD, such as hyperactivity, obsessive compulsive symptoms, maladaptive behaviours (such as aggressiveness and self-injury), which may compromise the children's engagement in education and treatments. (4) In case of comorbidities there is need for pharmacological interventions, and usually the drugs chosen are antidepressants, psychostimulants, neuroleptics and alfa-agonists. However none of these treat the child's social and communication features. (5)

Psycho-educational approaches are the most promising and scientifically proven interventions when it comes to improving social communication and interaction as well as diminishing repetitive behaviours. (6) They are described as interventions addressing the main impairments in ASD: social interaction, verbal and nonverbal communication and stereotyped behaviours. (6) These interventions have various philosophical basis, and are defined as strategies to address and improve the multiple core deficits present in ASD children (7), including behavioural strategies and facilitative therapies (language, occupational, speech therapies) and are so far the best method to help children with autism to be integrated in society. (8)

The purpose of this review is to describe the different comprehensive psycho-educational interventions published in scientific literature, their theoretical basis, practical effectiveness and the importance of this knowledge to health professionals, such as general practitioners or paediatricians that will work with children and their families, helping them achieve a successful development.

## **Materials and Methods**

We conducted a literature review searching for scientific articles about psycho-educational interventions in children with autism spectrum disorder. The papers were obtained from PubMed portal, using the query “autism spectrum disorder educational intervention children”. Search results were complemented by articles cited in the ones obtained from the query. We included articles that described and compared psycho-educational interventions in children (age less than 18 years old) diagnosed with ASD disorder using the DSM IV criteria and written in English.

## **Results**

The research resulted in a total 56 articles of interest for this review. There were 9 reviews, 2 books, 6 systematic reviews and 5 randomized clinical trials that contributed to this review.

## **PSYCHO-EDUCATIONAL INTERVENTIONS PUBLISHED IN SCIENTIFIC LITERATURE**

From the review described above we found that there are different types of instructional strategies applied in the comprehensive models of educational programs developed so far that can be summarized as it follows:

- 1) **Behavioural strategies** are based in altering or reducing unwanted behaviours using aversive approaches, functional analysis, and differential reinforcement of other behaviours, extinction, antecedent manipulation or a combination of these strategies - positive reinforcements are used more frequently than aversive techniques. (9)
- 2) **Developmental strategies** compare the skills of an autistic children with the ones of a typically developing peer, and it is assumed that the child is reinforced by their internal and natural motivation for learning. (9)

**3) Augmentative and alternative strategies** use assistive procedures for a symbolic communication, such as visual schedules, pictures exchange system, and signal communication in place of verbal language. (9)

These diverse strategies are then implemented into programs in various proportions. Despite the dissimilarities, it is known that the maximum effects of any direct treatment for children with ASD are achieved through the process of generalization of the knowledge learned, when in work with parents and typically developing peers. (9)

## **B. THEORETICAL BASIS**

Theoretically, there are two groups of orientation – behavioural and developmental – which guide the procedures of psycho-educational programs and their final goals.

The behavioural orientation emphasizes the acquisition of discrete skills in order to produce evolution in the child's social behaviour, rewarding when appropriate actions happen.

The developmental orientation states that the results are better when intervening at key deficits of ASD producing bigger changes.

## **C. PRACTICAL EFFECTIVENESS**

The programs that are more studied in terms of efficacy and that represent these theories are UCLA Young Autism Project (UCLA YAP); Denver Model and Treatment and Education of Autistic and Communication Handicapped Children (TEACCH), that are representative of behavioural theory, developmental theory and a mix of these two, respectively. (9) To be included in Eikeseth S. review (6) the study has to meet the criteria: of comprehensive psycho-educational intervention; be published in a peer-reviewed journal and the participants must be 6 years or less.

This review considered 20 studies based on Applied Behaviour Analysis (ABA)/Loovas UCLA YAP intervention, 3 on TEACCH and 2 on Denver Model. From these three, UCLA YAP is the one with more scientific validity, comparing parameters of diagnosis, study design, dependent measures (used to assess intellectual and adaptive functioning) and treatment fidelity. (6)

The **UCLA Young Autism Project (UCLA YAP)**, being representative of the behavioural approach, was the first with efficacy described in the literature. Loovas and colleagues (10) designed and developed a manual so it could be replicated by practitioners. (11) Applied behaviour analysis and discrete trial training remain as the main techniques used in children. (5) This approach focuses on ameliorating the child's impairment in communication, social and emotional abilities through reducing undesired behaviours and acquisition of adaptive skills. It also aims at integrating autistic children in typically developing peers setting, in order to promote generalization from schooling. The main characteristics are: an early intervention (if possible before 3.5 years of age); involvement of parents or guardians as co-therapists, thus helping the generalization of the skills taught; individual work with one child at a time, with schedules from 20-40 hours a week, for at least 2 years; and inclusion in a typical class. (6) In order to allow a more personalized approach, functional behaviour analysis is completed consisting in collecting the description of the behaviour problems, looking at the children's background and environment. Subsequently is formulated and hypothesised what motivates the behaviours and what strategies could modify it.(8) UCLA is the most studied therapy and it brings great profits to children with ASD, as well as it has a high degree of parental satisfaction. (5) In terms of results level, children receiving an ABA treatment, which is the base for Loovas's UCLA YAP had significantly more gains than the control groups in IQ, language developed, and adaptive functioning. (12)

The **Denver Model**, representative of the developmental theory, was developed by Rogers and Colleagues(13) and it's based on the theory of cognitive development of Piaget being mainly play-based. (6) The core goals are enhancing social perception, theory of mind and emotion sharing. The model includes sessions in a total of more than 20 hours per week, in divided sessions of activities and games applied to children from 2 to 5 years that ultimately improve relationships, symbolic thought and foster communication. They're focused on improving the social skills of children as well as their personal independence (through teaching chores, eating, dressing and grooming).

The **Treatment and Education of Autistic and Communication Handicapped Children (TEACCH)** was designed by Shopler and colleagues(14). It's a program that addresses multiple deficits in children with autism, being classified as eclectic for combining developmental and behavioural approaches. It's grounded on the understanding of how autistic people perceive and experience the world, in order to prepare them to be autonomous, exercising and enhancing education, social and communication skills. It relies in a structured and predictable teaching, using visual cues and timetables, fostering generalization. Before the program initiates, an assessment is carried out to identify the main problems to be improved in such a way that the program is individualized and promotes better results. (5) Some of the main components of this program are the organization of their surrounding environment; the use of a communication system by gestures, images, printed words or signs; encouraging the independent work of the child; teaching a visual system to help them complete more complicated tasks and boost parent involvement as co-therapists in their own homes, to exponentially improve what's been taught in the sessions.(6) There are many reports of children's improvement using this model (17).

Regardless of the existence of many psycho-educational programs, there is literature that supports that the best intervention is to combine different approaches, in a way which will lead to better and more complete results, so that the main objectives and mandatory requirements are fulfilled. (6)

Despite the differences in the theoretical basis from where they derive; these interventions share many goals and similarities. There is consensus concerning the **mandatory characteristics that interventions should follow in order to guarantee success:** psycho-educational Interventions should include a combination of developmental and behavioural approaches, and begin as soon as possible. It is scientifically proven that earlier approaches result in better outcomes, such as IQ gains, language and adaptive functioning, academic performance, as well as some measures of social behaviour, in children enrolled in these programs comparing with the ones in control group. (6) As soon as an ASD diagnosis is seriously considered the children should join immediately the intervention, as an alternative to waiting for the confirmation of the definitive diagnosis. (8) The family and/or caregiver must be actively involved in the intervention. (7) Children's outcomes from family-implemented intervention show better response to parents and adults, more words spoken and understood and lower classifications on the Autism Diagnostic Observation Schedule. Caregivers also benefit from the improvement in their knowledge about the disease, however a significant increase in stress/work load is referred from parents joining the implementation of the intervention in comparison to a regular Applied Behaviour Analysis intervention. As a counterpart, parents develop a greater synchrony. Summing up, training parents in specific skills will have positive changes in their offspring as there is evidence for positive modification in parental perceptions and in objective measures of child's behaviour. (15) It is recommended a low student-ratio to allow individual and adjusted objectives. On the other hand,

time to interact with and be involved in activities with typically developing peers must also be considered. Intervention and its development should be documented and measured, to evaluate and adjust the program when needed. The inclusion of routines, visual activities schedule and clear boundaries helps minimize disruptions. Besides the behavioural and developmental components it is also indispensable to encourage several other skills: spontaneous communication, joint attention, reciprocal interaction, adaptive skills, cognitive skills and academic skills. Another aim should be to reduce disruptive strategies as well. (8)

#### **D. IMPORTANCE OF THIS KNOWLEDGE TO HEALTH PROFESSIONALS**

The implementation of a comprehensive program requires high levels of practice training from the professional, as well as human and financial resources. A larger knowledge of these interventions will help to reduce an inefficient use of resources, as well as reduce errors and difficulties. (16)

It's a Health and Education Professionals' responsibility to raise awareness about ASD, the most effective treatments and to promote inclusion of these children in society. In order to potentiate this outcome it's crucial that the government and economic and health policies are notified. Health and economic policy makers should be warned in order to promote the training of professional and creating services that allow children's access to services that will help them to develop and have an easier and healthier integration in society. (17)

## **Discussion**

This review sheds light on the present knowledge of psycho-educational interventions, their foundations and the access of children to this type of services. We found consensus when it comes to required characteristics to guarantee a successful intervention.

A limitation to this review is that the selection of the articles was not systematic, reducing the validity of the results and their generalization.

One of the big obstacles to overcome during this review was the wide variety of terminology in the area of psycho-educational interventions. Despite the same meaning and principles applied, the approaches are titled dissimilar in the literature, such as Applied Behaviour Analysis, Intensive Behavioural Treatment and Early Intensive Behavioural Treatment.

Since psycho-educational interventions are such subjective interventions, it becomes difficult to evaluate and to measure its efficacy in quantitative extents, which is reflected in the small number of studies that assess and compare effectively the different interventions.

There has been literature criticising the overstated efficacy of UCLA program, claiming that the success percentage of Loova's model isn't that higher, because there were various studies following the method and never obtained such pronounced results. (18) Additionally, this approach is condemned by literature for the fact that its fundamentals are focused more on specific behaviours than the underlying basis of the disease, as well as its very time consuming and costly. (5) Nevertheless, this program was selected to represent the behavioural approach for its vast appearance in literature and efficacy results. (5) However there are new Intensive Behavioural Treatment that undergo the same theoretical basis to the practice. (11) There is need to report better

these evolutionary methods as they may represent a bridge to overcome the lapses described in the literature. (11) Concerning the Denver model there is still a lack of controlled trials to certify rigorously the assumptions mentioned. (8, 19) and looking at TEACCH there is still lack of scientific validation. for its results (20)

Regardless of the existence of many psycho-educational programs, and different report in number and in results of each of them, there is literature that supports that the best intervention is to combine different approaches.(21, 22) This will lead to better and more complete results, so that the main objectives and mandatory requirements are fulfilled. Developing these types of interventions should be a goal to achieve. It is also of major importance an overview on access of children with autism spectrum disorder and their families to these interventions, nationally. This evidence is crucial to policy makers so that there is a larger access to those in need.(17)

In a multifactorial study (17) Portugal is included in the subgroup of Southern Europe along with Italy, Spain and the Former Yugoslav Republic of Macedonia. The investigation was addressed to parents of children with ASD diagnostic with age bellow 7, in 18 countries. The survey evaluated the characteristics of participants (families of ASD children), use of interventions and predictors of use of interventions.

When it comes to Participants it is of notice the bigger percentage of high educational level (59% of the Portuguese respondents were graduate and post-graduate), which will in turn affect the knowledge of the disease, its available treatments and ultimately the real use of interventions.

Regarding the use of interventions, 93.8% of the Portuguese parents conveyed that their child had access to at least one type of intervention, and in the rest of families that their kid had zero access to interventions; it's important to mention that from the percentage that claimed no use

of interventions there were significantly more parents with lower educational level. This information raises the possibility that the educational level influences greatly the use of interventions. Given that the educational level of respondents to the questionnaire is higher than the general population, it is a possibility that a much bigger percentage of families don't enrol their children in these interventions. From the interventions measured (behavioural, developmental, relationship-based; and speech and language therapy; Occupational Therapy; Other Educational and psychological interventions; Parent Training), speech and language therapy was the most used (72.9% in Portugal). The behavioural, developmental and relationship-based interventions were used in 45%, being its use significantly higher in Southern Europe (54%), however if we analyse closely the particular case of Portugal we can see that this percentage is much lower (17.4% of the respondents uses Behavioural interventions (BEH) and 27.8% uses developmental and/or relationship-based interventions (DEV and/or REL)) in comparison to the neighbours Spain (30.3% of BEH use and 46.3% of DEV and/or REL) as well as the higher level of use in Italy (64.4% of BEH use and 26.0% of DEV and/or REL). If as stated before, it's scientifically proved that the most efficacious treatments are psycho-educational interventions, regardless of whether they are behavioural, developmental or eclectic treatments, we should be concerned for the possibly lower use of these interventions in Portugal.

There was a significant association in Southern Europe parents who had a lower level of education were four times more likely to not provide any assistance to the child. Once more, a reminder that the population that held the questionnaire had an unusually higher level of education in comparison to the general population, which lead us to hypothesize that the picture is much more disturbing, and there are probably bigger discrepancies between richer and poorer populations.

In Southern as well as in Eastern Europe the association between lower educational level and no use of interventions may be an indication that the Public Health National System does not provide the access to these interventions (behavioural, developmental and relationship-based), and if there is interest from the families (not to mention that prior knowledge is needed) they have to do the an economic effort to support their children's treatment.

### **Conclusion**

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder with a complex and still unknown aetiology, which causes a discrepancy in the development of social and communication skills as well as repetitive and restricted interests and activities. In general, this disorder is suspected before three years of age, since children show atypical behaviours such as lack of interest in joint attention, eye-contact. It is essential that paediatrician and general practitioners detect this developmental conducts in order to begin interventions as soon as the diagnosis is of high suspicion.

The literature reports a vast range of possible interventions for children with ASD, from pharmacological to pshyco-educational, occupational to language therapy. Even though there is a higher proportion of population that uses drugs to control some of the symptoms and behaviours presented by autistic children, and there are benefits in controlling disruptive behaviours, there aren't medications that mend the core deficits. This is where psycho-educational interventions come into play and have a noticeable positive effect.

There is a subset of division of this therapies, accordingly to their philosophy: developmental, behavioural or a fusion of these two (considered eclectic). But then again they

share common goals and are implemented with some common practices. The keys to success when it comes to psycho-educational interventions are:

- Begin intervention as soon as a diagnosis is of high suspicion, in order to have a bigger and more positive development of the child;
- Low student ratio and an individualized intervention based on prior assessment of the child and its antecedents;
- Involvement of parents or guardians as co-therapists;
- Combining developmental and behavioural techniques to achieve a more complete approach.

So we can come to conclusion that there is need in the literature of randomized controlled trials that assess programs/models/interventions that merge all of these understandings, and to develop a clear method that can cover all.

We must know the Portuguese reality when it comes to the availability of public services that provide these interventions, as well as if families have an equal access to them. It's a health and education professionals' responsibility to raise awareness for ASD in the general population, so that there is an inclusive civil society and prepared to deal with individuals with different needs. A more essential step must be given in economic and health policies, so that decision makers are holders of knowledge that allows the growth of services that will help and improve the quality of life of ASD children and their families.

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# Appendix

# Acta Médica Portuguesa Author Guidelines



## Normas de Publicação da Acta Médica Portuguesa

ACTA MÉDICA PORTUGUESA Editorial Council  
Acta Med Port 2013, November 5<sup>th</sup> 2013

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The aim of *Acta Médica Portuguesa* is to publish original research and review articles in biomedical areas of the highest standard, covering several domains of medical knowledge, with the purpose to help doctors improve medical care.

In order to accomplish these aims, *Acta Médica Portuguesa* publishes original articles, review articles, case reports and editorials, among others, with a focus on clinical, scientific, social, political and economic factors affecting health. *Acta Médica Portuguesa* will be happy to consider manuscripts for publication from authors anywhere in the world.

### 2. VALUES

Our principles are to promote:

- Scientific quality.
- Knowledge and state of the art scientific expertise.
- Editorial independence and impartiality.
- Ethics and respect for human dignity.
- Social responsibility.

### 3. PERSPECTIVES

To be acknowledged as a Portuguese medical journal with a relevant international impact.

To promote a scientific publication of the highest quality, giving priority to original research work in the field of clinical, epidemiological, multicentric studies and basic science.

To remain a publication forum of guidelines.

To enhance international dissemination.

Our motto "*Primum non nocere, Acta Médica Portuguesa* in the first place".

### 4. GENERAL INFORMATION

*Acta Médica Portuguesa* is the Portuguese Medical Association (*Ordem dos Médicos*) scientific journal with peer review.

It has been published continuously since 1979, being indexed in PubMed / Medline from the first issue. Since 2010 it has an Impact Factor attributed by the Journal Citation Reports - Thomson Reuters.

*Acta Médica Portuguesa* follows a free access policy. All manuscripts are available in full, in an open and free form since 1999 at [www.actamedicaportuguesa.com](http://www.actamedicaportuguesa.com) and

through Medline with a PubMed interface.

The rate of acceptance of *Acta Médica Portuguesa* is approximately 55% of the more than 300 annually received manuscripts.

The manuscript must be submitted online through "Online Submissions / *Submissões Online*" at <http://www.actamedicaportuguesa.com/revista/index.php/amp/about/submissions#onlineSubmissions>.

*Acta Médica Portuguesa* follows the good practice guidelines of the biomedical edition of the International Committee of Medical Journal Editors (ICMJE), the Committee on Publication Ethics (COPE) and the EQUATOR Network Resource Centre Guidance on Good Research Report (study design).

Our publication editorial policy inserts in the revision and publication process the Recommendations of Editorial Policy (Editorial Policy Statements) issued by the Council of Science Editors, available in <http://www.councilscienceeditors.org/i4a/pages/index.cfm?pageid=3331>, covering responsibilities and rights of the editors of publications with scientific peer review.

The proposed manuscript should not have been object of any other kind of publication. The views expressed are those of the Author(s). The published manuscript will remain a joint ownership of the *Acta Médica Portuguesa* and of the Author(s).

The *Acta Médica Portuguesa* reserves the marketing right of the manuscript as an integral part of the journal (for instance, for reprint purposes). The Author(s) should add to the submission letter a copyright declaration for commercial purposes.

Regarding the use by third parties, the *Acta Médica Portuguesa* is governed by the license Creative Commons 'Attribution – Noncommercial - NoDerivatives (by-nc-nd)'.

After publication in *Acta Médica Portuguesa*, the Authors are free to provide their manuscripts to their original institutions, as long as publication in *Acta Médica Portuguesa* is acknowledged.

### 5. AUTHORSHIP CRITERIA

The journal follows the authorship criteria of the "International Committee of Medical Journal Editors" (ICMJE).

In order to be designated as an Author, there should be

significant participation in the work, so that the Author must assume responsibility for its content and authorship credits.

An Author is someone:

1. Having had a substantial and direct intellectual contribution on the design and preparation of the manuscript
2. Having participated in data analysis and interpretation
3. Having participated in the writing of the manuscript, making a revision of the drafts; critical content review or approval of the final version

Conditions 1, 2 and 3 have to be met.

Authorship requires a substantial contribution to the manuscript. It is required that the contribution of each Author to the work is specified in a presentation letter.

Being listed as an Author, while not meeting eligibility criteria is considered as a fraud.

Everyone who has contributed to the manuscript, but who does not meet the authorship criteria, should be referred in the acknowledgements.

Every Author (i.e. the Corresponding Author and each of the Authors) has to fill and sign the "Authorship Form" with the authorship responsibility, criteria and contributions; conflicts of interest and sponsorship, including the Authors' copyright transfer.

The Corresponding Author should be the intermediary, on behalf of all the co-authors, in all contacts with *Acta Médica Portuguesa* during the whole process of submission and revision. The Corresponding Author is responsible for ensuring that any potential conflict of interest is correctly referred. The Corresponding Author should also testify, on behalf of all the co-authors, the originality of the work and obtain the written authorization of each person mentioned in the section "Acknowledgments".

## 6. COPYRIGHT / AUTHORSHIP RIGHTS

When the manuscript is accepted for publication, it is required that the digitalized document is sent by email, signed by all the Authors, together with the Author's copyright transfer between the Authors and *Acta Médica Portuguesa*. The Author(s) should sign one copy of the copyright transfer document between the Author(s) and *Acta Médica Portuguesa* when the manuscript is submitted:

Note: This signed document should only be sent when the manuscript has been accepted for publication.

Editor of *Acta Médica Portuguesa*

The Author(s) certify that the manuscript entitled (see form below): \_\_\_\_\_

\_\_\_\_\_ (ref. AMP \_\_\_\_\_) is original, that all the statements presented as facts are based on research of the Author(s) and the manuscript in part or in whole does not violate any copyright rules. In addition, the manuscript does not violate any privacy right, has not been published partially or totally, has not been submitted for publication, in whole or in part, in any other journal and the Author(s) has the right to the copyright.

All Authors further declare that they have participated in the work, that it is their responsibility and that there are

no conflicts of interest, regarding any of the Authors, in the statements issued in the work.

The Authors, when submitting the work for publication, share with *Acta Médica Portuguesa* all the rights and interests of the manuscript copyright.

All the Authors must sign

Date: \_\_\_\_\_

Name (capital letters): \_\_\_\_\_

Signature: \_\_\_\_\_

## 7. CONFLICTS OF INTEREST

The content accuracy, as well as the opinions expressed are an exclusive responsibility of the Author(s). The Author(s) must declare every potential conflict of interest.

The Author(s) must declare all financial and personal relations that may bias the work.

In order to prevent any ambiguity, the Author(s) must explicitly declare if there are or there are not any conflicts of interest.

This information should not influence the editorial decision but, before submitting the manuscript, the Author(s) must guarantee any necessary authorization for the publication of the submitted material.

If in doubt about the meaning of a relevant financial or personal interest, the Author(s) should contact the Editor.

## 8. INFORMED CONSENT and ETHICS APPROVAL

Any patient (or legal representative) that may be identified in a written description, photo or video, should sign an informed consent form allowing for these descriptions. These documents should be submitted with the manuscript.

The *Acta Médica Portuguesa* considers that it is acceptable to omit data or utilize less specific data presentation in the identification of a patient. Nevertheless, further data alterations will not be acceptable.

The Authors should inform if the work has been approved by their institution's Ethics Committee, according to the Helsinki declaration.

## 9. LANGUAGE

Manuscripts should be written in Portuguese or in English. Titles and abstracts must always be written in Portuguese and in English.

## 10. EDITORIAL PROCESS

The Corresponding Author will be notified by email regarding the reception of the manuscript and any editorial decision.

All submitted manuscripts are initially reviewed by the editor of *Acta Médica Portuguesa*. The manuscripts will be assessed under the following criteria:

originality, relevance, clarity, appropriate study method, valid data, adequate and data supported conclusions, importance, meaningful and scientific contribution to a specific area. The manuscript should not have been published, in whole or in part, nor submitted for publication elsewhere.

The *Acta Médica Portuguesa* follows a strict single-blind peer-review process. Experts in the relevant area of the manuscript will be requested to draw their comments, including acceptance suggestion, conditioned acceptance to minor or important modifications, or rejection. In this assessment process, the manuscript may be:

- a) accepted without any modifications;
- b) accepted after modifications suggested by the scientific advisors;
- c) rejected.

The following schedule is established in this process:

- After receiving the manuscript, the Editor-in-Chief, or one of the Associate Editors will send the manuscript to at least two reviewers, assuming that it meets publication rules and editorial policy. It may be rejected at this stage, without being sent to reviewers.

- When receiving the acceptance communication, the Authors should immediately email the copyright transfer form found at the site of *Acta Médica Portuguesa*, completed and signed by all Authors.

- The reviewer will be asked to answer the Editor in a maximum of four weeks, stating his comments on the manuscript under revision, including his suggestion regarding the acceptance or rejection of the work. Within a period of two weeks, the Editorial Council will take a first decision which may entail acceptance with no further modifications, may include reviewers comments so the Authors may proceed according to what is indicated or may indicate manuscript rejection.

Authors will have a period of 20 days to submit a new written version of the manuscript, addressing the modifications suggested by the reviewers and by the Editorial Council. When any modification is proposed, the Authors should email the Editor, in a maximal period of twenty days, with all the requested answers in addition to a written version of the manuscript with the inserted modifications in a different colour.

- The Editor-in-Chief will have a period of 15 days to reach a decision about the new version: rejecting or accepting the manuscript in its new version or submitting to one or more external reviewers whose opinion may or may not meet the first revision.

- In case the manuscript has to be re-sent for an external revision, the experts will have a period of four weeks to send their comments and their suggestion regarding the acceptance or rejection for publication.

- According to the suggestions of the reviewers, the Editor-in-Chief may accept the manuscript in this new version, may reject or ask for modifications once again. In the latter case, the Authors shall have a period of one month to submit a reviewed version, which may, in case the Editor-in-Chief so determines, be subjected to another revision process by external experts.

- In case of being accepted, in any of the referred stages, the decision will be sent to the Corresponding Author. In a period of less than one month, the Editorial Council will send the manuscript for revision by the Authors with the

final format, not including citation details. The Authors will have a period of five days for the text revision and to communicate any typographical error. At this stage, the Authors are not allowed to do any relevant modification, beyond any corrections of minor typographical and/or spelling mistakes. Data changes in graphs, tables or text, etc., are not allowed.

- After the Authors provide an answer, or if there has been no answer, the manuscript is considered completed, after the above-mentioned five day period.

- At the revision stage of proofreading, any relevant change in the manuscript will not be accepted and may mean further rejection by decision of the Editor-in-Chief.

Any transcription of images, tables or charts from other publications must meet prior authorization by the original authors, meeting copyright rules.

## 11. FAST-TRACK PUBLICATION

Fast-Track publication system is available in *Acta Médica Portuguesa* for urgent and important manuscripts that meet the *Acta Médica Portuguesa* requirements for the Fast-Track system.

- a) Authors may apply for a fast-track publication through manuscript submission at <http://www.actamedicaportuguesa.com/> under the heading “submit manuscript / *submeter artigo*”, clearly indicating why the manuscript should be considered for fast publication.

The Editorial Review Board will then take the decision as regards the suitability of the request for fast (Fast-Track) or otherwise regular publication.

- b) Authors must verify that the manuscript meets the rules that apply for submission and contains the complete information required by *Acta Médica Portuguesa*.

- c) The Editorial Review Board will communicate their decision within a 48 hour period, if the manuscript is considered appropriate for fast-track publication. If the Editor-in-Chief finds the manuscript unsuitable for Fast-Track evaluation, the manuscript may be proposed for the normal revision process, in which case Author(s) will be allowed to withdraw their submission.

- d) For manuscripts that are accepted for Fast-Track evaluation, an Editorial decision will be made available within five working days.

- e) If the manuscript is accepted for publication, an effort will be made to publish online within a maximal period of three weeks after acceptance.

## 12. THE GOLDEN RULES OF ACTA MÉDICA PORTUGUESA

- a) The editor will be responsible for maintaining quality, ethics, relevance and the up-to-date content of the journal.

- b) Any complaint will be dealt with by the Editor-in-Chief and not by the President of the Portuguese General Medical Council (Ordem dos Médicos).

- c) Peer review must engage an external reviewers' evaluation.

- d) Upon manuscript submission, confidentiality will be ensured by the editors and by all persons involved in peer-

-review.

- e) Reviewers' identity will remain confidential.
- f) The reviewers advise and formulate recommendations; the editor is responsible for the final decision.
- g) The Editor-in-Chief has full editorial independence.
- h) The Portuguese General Medical Council does not directly interfere with evaluation, selection or edition of specific manuscripts, nor directly or indirectly in editorial decisions.
- i) Editorial decisions are based on the merit of the submitted manuscript and journal interests.
- j) Editor-in-Chief decisions are not influenced by the manuscript's origin nor are they determined by any external agents.
- k) Reasons for immediate rejection without any external peer review include: lack of originality; limited interest for *Acta Médica Portuguesa* readers; serious methodological or scientific errors; superficial overview of a specific topic; excess of preliminary and/or descriptive data; outdated information.
- l) All peer-review elements should act according to the highest ethical patterns.
- m) All peer-reviewers must declare any potential conflict of interest and ask to be excluded from manuscript review whenever any doubt arises regarding the possibility of bias or incapacity for an objective review.

### 13. GENERAL RULES

#### STYLE

All manuscripts must be prepared in accordance with the "AMA Manual of Style", 10th ed. and/or "Uniform Requirements for Manuscripts Submitted to Biomedical Journals".

You are advised to write in a clear, direct and active style. In general, the first person should be used, in the active voice. As an example, write "We analyzed data" and not "Data was analyzed". Acknowledgements are an exception to this guidance as they should be written using the third person and in the active voice, as exemplified by: "The authors would like to thank.....". Latin words or in a language other than the one written in the text should be in italic. The components of the manuscript are: Title Page, Abstract, Text, References and, if appropriate, figure legends. Each different section should be started on a new page, consecutively numbered from the Title Page. Manuscripts should be saved in Word or WordPerfect. Do not submit in PDF format.

#### SUBMISSION

Manuscripts must be submitted online, via the "Online submission / *Submissão Online*" section of *Acta Médica Portuguesa* <http://www.actamedicaportuguesa.com/revista/index.php/amp/about/submissions#onlineSubmissions>.

Answers to every single field in the online submission form must be provided. Confirmation of manuscript submission will be received by the Author(s) together with a code number that will be attributed to the manuscript.

#### Mention in the first page/title page:

- a) Title in Portuguese and in English – concise and descriptive
- b) Names of all Authors (first and last name) together with academic and/or professional titles and affiliation (department, institution, city and country).
- c) Subsidies or grants that contributed to the work.
- d) Address and email of the Corresponding Author.
- e) Brief title for a heading.

#### Mention in the second page

- a) Title (no authors)
- b) Abstract in Portuguese and in English. The abstract may only contain information described in the manuscript. Abstracts must not cite the text or figures/tables of the manuscript.
- c) Keywords. After the abstract, a maximum number of 5 keywords written in English must be provided, using the recommended nomenclature in Medical Subject Headings (MeSH), <http://www.nlm.nih.gov/mesh/MBrowser.html>

#### Mention in the third and following pages:

##### ■ Editorials

Editorials are only to be submitted upon invitation by the Editor of *Acta Médica Portuguesa* and will concern currently relevant topics. Authors will be asked not to exceed 1200 words, not to include tables or figures and to use a maximum of 5 references. An abstract is not required.

##### ■ Current Perspective:

This is the type of manuscript that is submitted upon invitation by the Editorial Board. It may cover a broad diversity of themes focusing on health care: current or emergent problems, management and health policies, history of medicine, society issues and epidemiology, among others. An Author that wishes to propose a manuscript in this section is requested to send an abstract to the Editor-in-Chief including the title and Author list for evaluation. A maximum number of words is 1200 (excluding references and legends), up to 10 references, one table or one figure are allowed. An abstract is not required.

##### ■ Original Manuscripts:

Text must be divided in sections as follows: Introduction (including Objectives), Material and Methods, Results, Discussion, Conclusions, Acknowledgments (if applicable), References, Tables and Figures.

Original Manuscripts must not exceed 4000 words, excluding references and illustrations. It must be accompanied by illustrations with a maximum of 6 figures/tables and a maximal number of 60 references. The abstract should not exceed 250 words and must be structured as follows: Introduction; Material and Methods, Results, Discussion and Conclusion.

As a member of ICMJE, *Acta Médica Portuguesa* requires that all trials be registered in a public trial registry which is accepted by the ICMJE, in order for manuscript

publication (in other words, the registry must be a non-lucrative institution which is publicly accessible, for example: [www.clinicaltrials.gov](http://www.clinicaltrials.gov)).

All manuscripts that report clinical trials must follow the CONSORT *Statement* (<http://www.consort-statement.org/>).

A systematic review or meta-analysis must follow the PRISMA *guidelines*. In the case of a meta-analysis of observational studies the MOOSE *guidelines* must be followed and the study protocol should be presented as a supplementary file. STARD *guidelines* must be followed in the case of a study of diagnostic accuracy and the STROBE *guidelines* in observational studies. In Clinical Guidelines we encourage the Author to follow the GRADE guidance for evidence classification.

### ■ Review Manuscripts:

These are destined to thoroughly approach state of the art knowledge with respect to important themes. These manuscripts will usually be elaborated by invitation from the Editorial Team; however, in exceptional circumstances, it will be possible for experts in the field to submit to the journal a project regarding a review article. In the latter case, those projects that are judged to be relevant and are, as such, approved by the Editor, may then be developed and submitted according to the publication rules. The text must not exceed 3500 words (not including the abstract, legends and references). A maximum of 4 tables and/or figures and no more than 75 references are allowed. The abstract must not exceed 250 words and must be structured as follows: Introduction; Material and Methods, Results, Discussion and Conclusion.

### ■ Case Report

Report of a clinical case should be justified by its rarity, unusual aspects, atypical progress, diagnostic or therapeutic innovation, among others. The sections should be as follows: Introduction, Case report, Discussion and References. The text must not exceed 1000 words and no more than 15 references are allowed. It should be accompanied by illustrative figures. The number of tables and figures must not exceed 5. A non-structured abstract not exceeding 150 words, summarizing the objective, main messages and conclusions must accompany submission.

### ■ Images in Medicine (Medical Image)

Images in Medicine is an important contribution for the apprenticeship and practice of medicine. The type of medical images that are suitable include clinical images, imaging techniques, histopathology and surgery. Up to two images per case are accepted. This modality allows for a title with a maximum of eight words and a text with a maximum of 150 words referring to relevant clinical information and including a brief summary of the patients history, laboratory data, treatment and current clinical situation. No more than three authors and five references are allowed and an abstract is not required. Only original high quality photographs are accepted for publication which must be original. Two different

files are requested: one must contain the photograph in the high quality required for publication and another which is meant to be used as reference, where the top of the photograph must be indicated with an arrow. Information about submission of digital images is available at “Technical rules for figures, tables or photographs submission / *Normas técnicas para a submissão de figuras, tabelas ou fotografias*”.

### ■ Guidelines:

Medical societies, medical colleges, official entities and/or groups of physicians wishing to publish Clinical Practice Guidelines in *Acta Médica Portuguesa* must previously contact the Editorial Council and submit the complete text in a version prepared for publication. The Editor-in-Chief may condition publication in *Acta Médica Portuguesa* to an exclusivity agreement. It may be possible to publish a summarized version in the printed edition together with the complete publication of the version in the internet site of *Acta Médica Portuguesa*.

### ■ Letters to the Editor:

A Letter to the Editor must consist of a comment regarding an article published in the *Acta Med Port* or a short statement regarding a clinical subject or case study. It should not exceed 400 words, should not include more than one figure and a maximum of 5 references are allowed. An abstract is not required.

The general structure should be as follows: Identification of the article (indicated as reference 1); the reason to write the letter; evidence based statements (from the literature or from personal experience); a summary and literature references must be provided.

The answer(s) of the Author(s) should keep the same format.

A Letter to the Editor discussing a recently published *Acta Med Port* article has the highest acceptance probability if submitted within four weeks of the article publication

**Abbreviations:** Do not use abbreviations or acronyms neither in the title nor in the summary and limit their use in the text. The use of acronyms must be altogether avoided as well as the excessive and unnecessary use of abbreviations. If the use of uncommon abbreviations is found to be absolutely required, when first utilized they must be adequately defined, in full, and immediately followed by the said abbreviation in parenthesis. Do not follow abbreviations by full stops.

**Measurement Units:** Units of length, height, weight and volume must be expressed in the metric system units (metre, kilogram or litre) and their decimal units. Temperatures must be presented in Celsius degrees (°C) and blood pressure in millimetres of mercury (mmHg). For more information please consult the conversion table “Units of Measure” provided at the website of AMA Manual of Style (<http://www.amamanualofstyle.com/>)

**Names of Drugs, Devices or other Products:** Use the non-commercial name of drugs, devices or other products unless the commercial name is essential for discussion.

## IMAGES

Enumerate all images (figures, graphs, tables, photographs, illustrations) by text citation order. Include a title/legend for each image (a brief sentence, preferably not exceeding 15 words). Colour images will be published at no extra charge. The following formats are acceptable in the manuscript:

BMP, EPS, JPG, PDF and TIF. These should have a 300 dpi resolution and be at least 1200 pixels wide and in proportion to height.

Tables and Figures must be enumerated by text citation order by Arabic numbers and identified as Figure/Table. An Arabic number as well as a legend must be attributed to Tables and Figures. Each Figure/Table must be referenced in the text as exemplified as follows: “These are some examples of an abnormal immune response that may be at the origin of Behçet’s disease. (Fig. 4). This is associated with two other cutaneous lesions (Table 1).”

When a Figure is mentioned in the text it should be abbreviated to Fig. while the word Table should not be abbreviated. In legends, both words must be written in full. Figures and Tables should be enumerated with Arabic numbers independently and according to the sequence with which they are cited in the text. Example: Fig. 1, Fig. 2, Table 1.

**Legends:** After the reference section, a detailed legend (no abbreviations) must be included with each image in the file with the text manuscript. The image must be referenced in the text and its approximate location must be indicated “Insert Figure 1.....here”.

**Tables:** It is compulsory to send tables in black and white at the end of the file. Tables must be presented and submitted in a word document, in a simple table format (simple grid), without tabs or other typographical formats. All tables must be mentioned in the text of the manuscript and enumerated in the order mentioned in the text. Indicate the respective approximate location in the body of the manuscript with the comment “Insert Table 1... here”. Authors must be prepared to authorize the reorganization of tables as considered necessary. Tables must be accompanied by the respective legend/title which must be elaborated in a brief and clear form. Legends must be self-explanatory (without the need to refer to the text of the manuscript) – written as a descriptive statement.

**Legends/Titles of Tables:** Place these at the top of the table, justified to the left. Tables are read top-down. All information should be placed in the inferior portion of the table – end of page notes (abbreviations, statistical significance, etc.). End of page notes that are too extensive for the title or data cells must use the following symbols \*, †, ‡, §, ||, ¶, \*\*, ††, ‡‡, §§, ||||, ¶¶.

**Figures:** Authors may use as many files as required, each pertaining to a Figure and submitted separately, in an electronic version and ready for publication. A word file is unsuitable and will not be accepted for Figure submission, including photographs, drawings and graphs. These should be submitted in format TIF, JPG, BMP, EPS and PDF with a 300 dpi resolution, at least 1200 pixels wide and in proportion to height. Legends must be placed in the file pertaining to the manuscript text. If the figure is copyrighted material it is the responsibility of the Author(s) to obtain the relevant legal permission before sending the file to *Acta Médica Portuguesa*.

**Figure Legend:** These are placed underneath the figure or graph and justified to the left. Graphs and other figures are usually read bottom up. Images of patients are only accepted if judged necessary for the understanding of the manuscript. If the patient can be identified in the figure then patient authorization for publication must be obtained and sent to *Acta Médica Portuguesa*. If the photograph allows for very obvious patient recognition then it may be found to be unsuitable for publication and, in case of doubt, the final decision will rest with the Editor-in-Chief.

- **Photographs:** In format TIF, JPG, BMP and PDF with a 300 dpi resolution and at least 1200 pixels wide and in proportion to height.

- **Drawings and graphs:** Drawings and graphs must be sent in a vector format (AI, EPS) or in a bitmap file with a minimal resolution of 600 dpi. Drawings and graphs must be in Arial letter font. Images must be presented in separate files, submitted as supplementary documents, in conditions of reproduction and according to the order in which they are discussed in the text. Images must be submitted independently of the text.

## ACKNOWLEDGMENTS (optional)

These must be placed after the text and must address all that contributed to the manuscript but do not qualify for authorship. In this section it is possible to thank all sources of support, financial, technological or in a consulting capacity as well as individual contributions. Each person cited in the acknowledgment section must send an authorization for his or her name to be included in this section.

## REFERENCES

Author(s) are responsible for the exact and accurate use of references and for their correct citation in the text.

References must be cited numerically (Arabic numbers in superscript) and in the order they appear in the text and they must be identified in the reference list with Arabic numbers. **Example:** “Dimethylfumarate has also been a systemic therapeutic option in moderate to severe psoriasis since 1994<sup>13</sup> and in multiple sclerosis<sup>14</sup>.”

If more than two references are cited in a sequence, indicate only the first and the last, separated by a dash<sup>5-9</sup>.

In the case of alternate citation, all references must be indicated, separated by a comma<sup>12,15,18</sup>.

References must be aligned to the left.

Reference list must not include manuscripts in the stage of preparation, unpublished observations or personal communications, among others. These are only allowed in the body of the text (e.g.: P. Andrade, personal communication).

Abbreviations of journal names must conform to those that are used by the National Library of Medicine (NLM) *Title Journals Abbreviations* <http://www.ncbi.nlm.nih.gov/nlmcatalog/journals>

**Note:** The month of publication must not be indicated.

In individual references with less than 6 Authors, all authors must be included. In references with more than 6 Authors only the first 6 must be named followed by "et al". Examples for the different types of references are provided.

#### Manuscript:

Surname Initials of Author(s). Manuscript Title. Journal Name (Abbreviated). Publication Year; Volume: pages.

##### 1. Less than 6 authors

Miguel C, Mediavilla MJ. Abordagem actual da gota. *Acta Med Port.* 2011;24:791-8.

##### 2. More than 6 authors

Norte A, Santos C, Gamboa F, Ferreira AJ, Marques A, Leite C, et al. Pneumonia Necrotizante: uma complicação rara. *Acta Med Port.* 2012;25:51-5.

#### Monography:

Author/Editor AA. Title: complete. Edition (unless it is a first edition). Vol. (if the referenced work pertains to more than one volume). Place of publication: Commercial Editor; year.

##### 1. With Authors:

Moore, K. *Essential Clinical Anatomy*. 4th ed. Philadelphia: Wolters Kluwer Lippincott Williams & Wilkins; 2011.

##### 2. With editor:

Gilstrap LC 3rd, Cunningham FG, VanDorsten JP, editors. *Operative obstetrics*. 2nd ed. New York: McGraw-Hill; 2002.

#### Monography Chapter:

Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. In: Vogelstein B, Kinzler

KW, editors. *The genetic basis of human cancer*. New York: McGraw-Hill; 2002. p. 93-113.

#### Scientific/Technical Report:

Lugg DJ. *Physiological adaptation and health of an expedition in Antarctica: with comment on behavioural adaptation*. Canberra: A.G.P.S.; 1977. Australian Government Department of Science, Antarctic Division. ANARE scientific reports. Series B(4), Medical science No. 0126

#### Electronic Document:

##### 1. CD-ROM

Anderson SC, Poulsen KB. *Anderson's electronic atlas of hematology [CD-ROM]*. Philadelphia: Lippincott Williams & Wilkins; 2002.

##### 2. Internet monography

Van Belle G, Fisher LD, Heagerty PJ, Lumley TS. *Biostatistics: a methodology for the health sciences [e-book]*. 2nd ed. Somerset: Wiley InterScience; 2003 [consultado 2005 Jun 30]. Disponível em: Wiley InterScience electronic collection

##### 3. Homepage/Website

Cancer-Pain.org [homepage na Internet]. New York: Association of Cancer Online Resources, Inc.; c2000-01; [consultado 2002 Jul 9]. Disponível em: <http://www.cancer-pain.org/>.

#### PROOFREADING

Unless indicated otherwise by the Author(s), proofreading is the responsibility of the Editorial Council. As such this task will be completed within the time limit determined by the Editorial Council as a function of the editorial requirements of *Acta Médica Portuguesa*. Authors will receive publication proofs in PDF format for correction and these must be returned within a time limit of 48 hours.

#### ERRATA AND RETRACTIONS

*Acta Médica Portuguesa* publishes alterations, errata or retractions to previously published manuscripts. After the publication these will be in the form of an errata.

#### FINAL NOTE

For more complete information we recommend reading *Uniform Requirements for Manuscripts Submitted to Biomedical Journals* of the International Committee of Medical Journal Editors, available in <http://www.ICMJE.org>.