

Professional practices and recommendations / Pratiques professionnelles et recommandations

# What is the best support surface in prevention and treatment, as of 2012, for a patient at risk and/or suffering from pressure ulcer sore? Developing French guidelines for clinical practice

*Quel support choisir pour un patient à risque et/ou porteur d'escarre(s) en 2012 ?  
Vers l'élaboration de recommandations françaises pour la pratique clinique*

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Received 4 August 2012; accepted 7 August 2012

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## Abstract

**Introduction.** – The use of support surfaces in the prevention and treatment of pressure ulcers prevention is an important part of care for a patient at risk and/or suffering from sore(s).

**Objectives.** – Define which support surfaces to use in prevention and treatment of at-risk and/or pressure sore patients.

**Methodology.** – A systematic review of the literature querying the several Pascal Biomed, PubMed and Cochrane Library databases from 2000 through 2010.

**Results (Grade A).** – In prevention, a structured foam mattress is more efficient than a standard hospital mattress. An alternating pressure mattress is more effective than a visco-elastic mattress limiting the occurrence heel pressure ulcers, but those that do occur are more serious. A low-air-loss bed is more efficient than a mixed pulsating air mattress in prevention of heel pressure ulcers. Some types of sheepskin can reduce sacral pressure ulcer incidence in orthopedic patients. Use of an overlay on an operating table limits the occurrence of peroperative and postoperative pressure ulcers. An air-fluidized bed improves pressure ulcer healing.

**Discussion.** – The data in the literature are not always relevant and do not suffice to dictate a clinician's choices. We are compelled to recognize the methodological limitations of many studies, the lack of corporate interest in conducting such studies and the relatively small number of available trials. However, the effectiveness of some support surfaces reaches a sufficient level of evidence, especially when they are associated with postural, hydration and nutritional measures.

**Conclusion.** – Support surfaces are recommended in prevention and treatment of patients at risk and/or already suffering from pressure ulcer, and their use should constitute part of an overall preventive or curative strategy.

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**Keywords:** Pressure ulcers; Prevention; Treatment; Support surfaces; Beds; Mattresses; Cushions; Guidelines; Evidence-based medicine

## Résumé

**Introduction.** – L'utilisation des supports d'aide à la prévention et au traitement des escarres fait partie intégrante du projet thérapeutique d'un patient à risque ou porteur d'escarre(s).

**Objectifs.** – Déterminer quels supports utiliser en 2012 dans une stratégie préventive ou curative chez un patient à risque et/ou porteur d'escarre(s).

**Méthode.** – Revue systématique de la littérature avec interrogation des bases de données PASCAL Biomed, PubMed et Cochrane Library entre 2000 et 2010.

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**Résultats (Grade A).** – Les matelas en mousse structurée ont une efficacité supérieure au matelas hospitalier standard en prévention. Un matelas à air alterné réduit l'incidence des escarres talonnières par rapport à un support viscoélastique mais les escarres sont plus sévères sur les matelas à air alterné. Un lit à perte d'air est plus efficace qu'un matelas à air pulsé mixte en termes de réduction de l'incidence des escarres talonnières. Certains types de peau de mouton réduisent l'incidence des escarres sacrées des patients orthopédiques, avec faible risque d'escarre. L'utilisation d'un surmatelas sur une table d'opération réduit l'incidence des escarres per- et postopératoires. Le lit fluidisé accélère la cicatrisation des escarres.

**Discussion.** – Les données de la littérature ne sont pas toujours pertinentes et parfois insuffisantes pour éclairer le choix du clinicien. Il faut retenir l'existence de limites méthodologiques, le manque d'intérêt des fabricants à conduire de telles études et le faible nombre d'études disponibles. Cependant certains supports confirment leur intérêt avec un niveau de preuve satisfaisant. Ils sont surtout utiles lorsqu'ils sont associés au positionnement, à l'hydratation et à la nutrition.

**Conclusion.** – Il est recommandé d'utiliser des supports d'aide à la prévention et au traitement chez les patients à risque et ou porteurs d'escarres. Leur utilisation doit s'inscrire dans une stratégie globale préventive ou curative.

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**Mots clés :** Escarres ; Stade ; Prévention ; Traitement ; Support ; Lit ; Matelas ; Coussins ; Recommandations ; Médecine fondée sur les preuves

## 1. English version

### 1.1. Introduction

A wide variety of support surfaces contributing to the prevention and treatment of pressure ulcer sores (PUs) are available to individuals and to health care facilities, for purchase or for rent, on the French and worldwide markets. In France, some financial outlays are reimbursed by national health insurance and the refunding may be misconceived as proof of effectiveness. Product offer ranges from a simple protection device for the knee or the heel (about 50 euros per unit) through different types of overlays or foamy mattresses all the way to medical beds, which are used in intensive care after major surgery and cost more than 80,000 euros. Whatever the support may be made of, its prime objective consists in reducing the pressure exerted between the subject's body and a given surface. At present, there exist two pressure reduction techniques. The most widely used technique consists in immersing the patient's body, which means that he "sinks into" it, thereby redistributing his weight on a large load bearing surface; this is the case with foamy mattresses and air-fluidized beds. The second technique consists in automatic pressure/vacuum, and it is represented by the pulsating air supports that are incorrectly characterized as dynamic, along with supports that modify postures through more or less complete rotation of the body. Notwithstanding the number of articles devoted to the subject, it is difficult to form a balanced opinion on product quality. Most of the purportedly scientific clinical studies are subject to methodological problems; patient cohorts, for example, tend to be insufficiently numerous. Recently, several meta-analyses have reexamined the articles published over the last 30 years; in conjunction with the latest articles, they highlight some key or guiding ideas meriting further examination. The objective of the present study is consequently to draw up an assessment of the literature and the state of the art at the outset of the third millennium.

### 1.2. Objectives

To determine in view of the literature the support surfaces to be used in prevention and treatment, as of 2012, for a patient at

risk and/or suffering from sore(s). Since few of the devices can be considered as curative, this research is primarily focused on preventive supports. They include bedding (on a mattress, the mattress itself, or a complete bed), seating (static and dynamic cushions), protection accessories for the protruding parts of the body, positioning accessories, operating tables and transport trolleys.

### 1.3. Material and methods

Elaborated by SOFMER [36], the method employed involves three main steps: a systematic review of the literature, a compendium of prevailing professional practices and validation by a multidisciplinary panel of experts.

#### 1.3.1. A systematic review of the literature

**1.3.1.1. Study selection.** A systematic review of the literature dating from 2000 through 2010 was carried out by two professional documentarians. The English-language keywords were: pressure sore; pressure ulcer; stage; prevention and control; nursing therapy; equipment design; mattresses; support surfaces; cushion; bed; wheelchair; practice guidelines; evidence-based medicine and evidence-based nursing. Their French-language counterparts were: *escarres*; *stade*; *prévention*; *traitement*; *support*; *lit*; *matelas*; *coussin*; *recommandations*; *médecine fondée sur les preuves*.

They were proposed by a medical bibliography selection committee composed of physicians representing PERSE, the French association of geriatrics and gerontology, the French and French-speaking wound healing society and the French society of physical medicine and rehabilitation. The databases employed were: PASCAL Biomed, PubMed and Cochrane Library. The material chosen for review was limited to articles in English and French pertaining to adult human subjects and containing an abstract. An initial selection of summarized articles was carried out independently by the same committee in order to pinpoint those relevant to the general theme. The complete articles in an electronic or paper format were then transmitted to two experts, who performed a second selection with the objective of retaining articles dealing with supports on the basis of their reading of the "material and methods"

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