



Evaluation of the service offer from the
Centre d'expertise pour les victimes de
brûlures graves de l'est du Québec (CEVBGEQ)
in relation to the use of pressure garments
to treat scarring in severe burn patients

EXECUTIVE SUMMARY

of the classic ETMI Report

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PROBLEM

The treatment of hypertrophic scars resulting from severe burns remains a challenge for patients as well as for healthcare professionals. Currently, the use of pressure garments is considered standard in burn treatment, but some questions remain regarding their efficiency and optimal use [2]. Indeed, many parts of this method of treatment remain unclear, notably concerning the lack of uniformity in the criteria used to define the degree of scarring, the inability to determine optimal pressure to apply to the scars, patients' non-compliance due to strict schedules imposed by the treatment, and the inability to lead randomized clinical trials for ethical reasons [3]. In addition to not being attractive, pressure garments used with severe burn patients are also linked to different undesirable side-effects such as heat, pruritus, blisters, breach of skin integrity, skin infections, allergies, or skeletal deformities. Difficult personal experiences can sometimes add to the complexity of the treatment. Resistance and concerns from users can negatively affect their compliance to the therapy, thus hindering optimal care and desired results.

CONTEXT

The development of hypertrophic scars, caused by an excess deposit of collagen, is one of the most common physical complications in severe burn survivors. A variety of therapeutic options are available to treat hypertrophic scars, namely wearing pressure garments to reduce pain and pruritus, and improve the overall appearance of the scar [1]. In the Quebec area, burn patients are cared for by the *Centre d'expertise pour les victimes de brûlures graves de l'est du Québec (CEVBGEQ)*. This centre is comprised of the *Unité des grands brûlés de l'Hôpital de l'Enfant-Jésus du CHU de Québec-Université Laval* (hereafter, *CHU de Québec*), the *CIUSSS de la Capitale-Nationale installation de l'Institut de réadaptation en déficience physique de Québec (IRD PQ)* and *l'Association des grands brûlés F.L.A.M.*. From this partnership, a specialized pressure garment manufacturing service was developed to respond to the needs of patients that required this method of therapy. In view of the evolving technologies in this area, there are questions about whether the current methods are still optimal to offer an efficient and safe treatment to severe burn victims. The Multidisciplinary Service Department (*Direction des services multidisciplinaires (DSM)*) and the Burn Treatment Program (*Direction du programme des grands brûlés*) of *l'Hôpital de l'Enfant-Jésus du CHU de Québec* have requested that the *Unité d'évaluation des technologies et modes d'intervention en santé (UETMIS)* du *CHU de Québec-Université Laval* evaluate the service offer from the CEVBGEQ on the use of pressure garments. This request was made in collaboration with the *Unité d'évaluation des technologies et modes d'intervention en santé et services sociaux (UETMISSS)* du *CIUSSS de la Capitale-Nationale*.

OBJECTIVE

The main objective of this classic ETMI is to answer the following question:

Should the service offering from the CEVBGEQ related to pressure garments to treat scarring in severe burn patients (i.e., reaching the dermis) be modified?

Specifically, the following evaluation questions are asked:

- 1 › What is the efficacy of pressure garments used to treat scars in severe burn patients?
- 2 › What is the safety of pressure garments used to treat scars in severe burn patients?
- 3 › What are the recommendations in terms of good clinical practices concerning the use of pressure garments to treat scars in severe burn patients?
- 4 › What are the current clinical practices concerning the use of pressure garments to treat scars in severe burn patients in the *Centres d'expertise pour les victimes de brûlures graves de l'est (CEVBGEQ) et de l'ouest (CEVBGOQ) du Québec*?
- 5 › How do severe burn patients of the CEVBGEQ and CEVBGOQ rate their experience with the use of pressure garments to treat their scars, compared to data from the literature?
- 6 › If the service offering regarding the use of pressure garments to treat scars in severe burn patients at the CEVBGEQ is modified, what organisational effects need to be considered for the *CHU de Québec* and the *CIUSSS de la Capitale-Nationale*?

For more information, see the report at:

https://www.chudequebec.ca/getmedia/ea795382-d713-49d4-882c-b62987ccddff/RAP_01_21_vetements_compressifs_compressed.aspx or at
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METHODOLOGY

A systematic review of the literature was done to analyze available evidence up to September 1st, 2020. Study results on the efficacy of pressure garments were synthesized and analyzed according to desired therapeutic effects. Data on the safety of the treatment were analyzed according to undesirable effects caused by wearing pressure garments. Individual results were not aggregated in a metanalysis, due to the heterogeneity and the methodological limits of the studies.

The experiences of severe burn patients treated with pressure garments were documented from literature and from the results of a survey between June 17th and October 22nd, 2020, with users. Development of the questionnaire and performance of this survey were in collaboration with the *Bureau d'expertise en expérience patient et partenariat du CHU de Québec*. Descriptive analyses were performed.

Information has been collected through interviews with two occupational therapists and a tailor for the CEVBGEQ, and two occupational therapists from the CEVBGOQ between June 1st and July 2nd, 2020. The objective was to describe the service offer related to pressure garments to treat scars in severe burn patients in both environments. A qualitative synthesis of the different elements reported during these interviews was done.

RESULTS

Despite persistent uncertainties regarding the efficiency of pressure garments to improve scars in severe burn patients, published results for certain indicators suggest some efficiency. Benefits have been observed regarding thickness, flexibility, and overall appearance of scars. On the other hand, the lack of data concerning the safety of pressure garments does not allow the evaluation of associated undesirable effects. However, data from literature, as well as from the experience of occupational therapists from centres of expertise in Eastern and Western Quebec, suggest that it is safe to use pressure garments to treat severe burn patients.

Although data from the survey done with CEVBGEQ and CEBVGOQ users show satisfaction regarding services received, the analysis of the different data sources about the experience of users sheds some light on different factors that could influence compliance to wearing the pressure garments. Among them, users' perception of the benefits observed, such as improving overall appearance, thickness, or flexibility of the scars, could encourage them to wear pressure garments, according to data from this survey, as well as others in the literature.

An adherence rate of 56% was obtained with users from the two centres of expertise. Discomfort and unpleasant effects associated with pressure garments were the main deterrents reported. However, the factors inciting the use of pressure garments that were identified in the different data sources could guide the development of interventions favoring compliance to the treatment plan within a continuous improvement of the service offer. The use of new technology, such as an apparatus to measure the pressure exerted by the garment, could also be explored since no data from this ETMI has led to conclusions regarding the optimal properties of the garments, specifically concerning compressive pressure.

RECOMMENDATIONS

Recommendation 1

In view of the fact that:

- › Studies on the efficacy of pressure garments to treat scars in severe burn patients have certain methodological limitations;
- › No study has reported on the rate of occurrence of hypertrophic scars associated to wearing pressure garments;
- › Results of randomized clinical trials suggest that the use of pressure garments improves the thickness and, in some cases, the flexibility of hypertrophic scars;
- › Available probing data on the efficacy of pressure garments to treat scars in severe burn patients does not permit to determine the optimal level of compression to apply with these garments;
- › Few randomized clinical trials on the treatment of scars in severe burn patients have compared the efficacy of pressure garments to low-pressure garments or to therapies excluding pressure garments;
- › The undesirable effects linked to wearing pressure garments are not well documented in literature, and the rare complications related to their use are no more frequent than those observed with standard care excluding pressure garments;
- › Based on probing data and expert opinions, learned societies recommend the use of pressure garments, mainly to improve the appearance of scars (f. ex.: thickness, erythema) or to prevent the development of hypertrophic scars;
- › Positive effects have been reported on the appearance of scars by wearing pressure garments, in patient experience data from scientific literature and from the survey done in two expert centers for severe burn victims in Quebec;

It is recommended that the *Centre d'expertise pour les victimes de brûlures graves de l'est du Québec (CEVBGEQ)* keeps using pressure garments as part of their service offering, among the procedures to consider, to prevent and treat hypertrophic scars in severe burn victims.

In view of the limitations of currently available data on the efficacy and safety, and particularly on the optimal pressure exerted by pressure garments, the CEVBGEQ team is urged to explore the feasibility of adding an objective measuring process for the level of compression of these pressure garments to their service offering. CEVBGEQ team participation in research projects aiming to improve and develop knowledge on pressure garments is also encouraged.

Recommendation 2

In view of the fact that:

- › The level of compliance to wearing the pressure garments ranges from 41% to 70% in literature and rises to 56% in the survey done with users from the two expert centers for severe burn patients in Quebec;
- › Probing data does not permit to draw conclusions on the optimal properties of pressure garments (f. ex.: type of fabric, compressive pressure, product aging, elasticity, breathability, sun protection factor, anti-shrinkage when washing, color stability, replacement frequency);
- › The discomfort and presence of undesirable effects (f. ex.: heat, sweating, itching) are the main aspects inciting users who took part in the studies in literature and those who were surveyed to not wear their pressure garments;
- › Nearly one third of surveyed users in the survey are dissatisfied or very dissatisfied by the esthetic aspect of pressure garments, and nearly half of these users would like to have more choice of fabrics or colors;
- › Pressure garment manufacturing differs between the two expert centers for severe burn patients in Quebec regarding the choice of fabric and measuring, manufacturing and alterations;
- › Based on survey results, users report an attitude of respect and attentiveness from members of the CEVBGEQ staff and appreciate the quality of services in regard to pressure garments;
- › Data from literature, from the survey done among users and from interviews with professionals from the expert centers helped identify the factors upon which we can act to improve compliance to wearing pressure garments;

It is recommended that the *Centre d'expertise pour les victimes de brûlures graves de l'est du Québec (CEVBGEQ)* team explore avenues of improvement in their service offering linked to pressure garments, to foster better compliance in severe burn patients.

It is suggested that the CEVBGEQ team, including doctors, nurses, occupational therapists, tailors and managers consult to identify the elements that could improve compliance to wearing pressure garments in their service offering. The following avenues could be explored:

- Revision of the measuring, tailoring and alterations methods. A Lean approach would be interesting in this sense to optimize the use of resources while aiming to offer users quality care at the right time;
- Improving the comfort of pressure garments (f. ex.: material, choice of manufacturer, design) to meet the needs expressed by users regarding the undesirable effects and restricted movement;
- Revision of the terms of knowledge transfer to users, regarding clarity and quantity of information, as well as the methods used (ex.: through peers, images, or videos), to respond to their needs.

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