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Returning to School Following a Burn Injury:

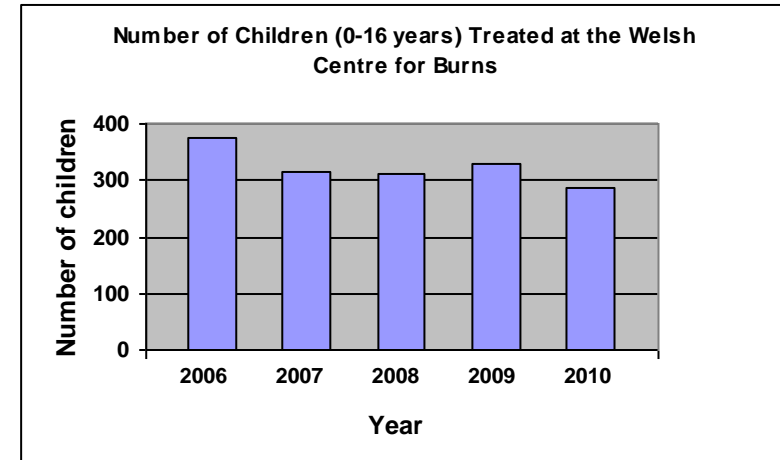
A Guide for Teachers

Welsh Centre for Burns
Morrison Hospital

1. Introduction

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The Welsh Centre for Burns at Morriston Hospital serves a population of over 2.3 million people. Approximately 37% of the total number of patients treated at the Centre every year are under 16 years old.

We are very aware that school plays a key role in helping a burn-injured child to take up life as it used to be before the accident. Because of this, it is important that the child returns to this world of play, friends and learning as quickly as possible. Preparation for a burn-injured child to return to school is therefore an integral and vital part of the discharge planning process.

The successful re-integration of a burn-injured child into school life can pose a big challenge to a school. The teachers' ability to handle the situation sensitively can affect the child's acquisition and maintenance of self-esteem, and make a crucial contribution to their further social and psychological development.

A child in your class will soon be returning to school after sustaining a burn injury. You may now be thinking about what affect this experience has had on the child, and how best to help a pupil with burn injuries return to school.

This booklet has been designed to equip you with the knowledge and understanding required to facilitate this process, so that you can ensure an informed and positive approach to the burn injured child from all school staff and children. It contains basic information about burn injuries, scarring and its' management and precautions to be taken.

If you require any further information, or feel that your colleagues or the child's classmates would benefit from a visit to the school by the Burns Centre Team, please do not hesitate to contact us to discuss the matter further.

2. The Skin

In order for you to understand how and why scarring develops following a burn injury, it is useful for you to know a little about the structure and function of normal skin.

Structure of the Skin

The skin is the largest organ of the body and is essential for survival. It is composed of three basic layers. The outer layer is the epidermis, the dermis is in the middle and fat forms the innermost layer. Normally, the surface of the skin is smooth, punctuated only with hairs and pores for sweat.



Function of the Skin

The main function of the skin is to provide a protective barrier between you and the environment to protect the underlying structures. The outermost layer of the epidermis is made up of sheets of dead cells that act as a waterproof barrier. There are also special cells inside the epidermis that give protection from ultra-violet light.

The dermis contains sweat glands and blood vessels, which help regulate body temperature, and nerve endings which send the sensations of pain, itching, touch and temperature to the brain. It also contains oil glands, which produce a substance called sebum to help moisturise the skin, and hair follicles. The main structural component of the dermis is a connective tissue called collagen, and this lies in flat, organised bundles. The upper layers of skin provide the pressure necessary to promote this. As new collagen fibres form, the old ones are broken down.

The innermost layer of the skin consists of fat, which provides insulation and helps to store calories.

The deeper the burn injury the more of these structures are destroyed, and their functions therefore lost.

3. Classification of Burns

Burns are categorised by the following criteria:

Type of Burn

- **Thermal**
 - Flame
 - Steam
 - Hot liquid
 - Hot metal
- **Chemical**
 - Acid
 - Alkali
- **Electrical**
- **Radiation**
- **Friction**

Depth of Burn

- Superficial
 - Involves the outer epidermis.
 - Red in appearance.
 - Extremely painful.
 - Heals spontaneously within 5-10 days without leaving any residual scarring (e.g. sunburn).
- Superficial Dermal/ Partial Thickness
 - Involves the epidermis and superficial layers of the dermis.
 - Red and blistered in appearance.
 - Painful.
 - Heals by the spread of new skin cells from the hair follicles, sweat and oil glands to cover the area. This occurs in approximately 10-14 days.
- Deep Dermal/ Partial Thickness
 - Epidermis and significant layers of the dermis are destroyed.
 - Mottled red or waxy white in appearance. Not blistered
 - Variable sensation.
 - Fewer hair follicles, sweat and oil glands left to produce new skin cells, so healing takes significantly longer and there is more scarring. Skin grafting may be required.
- Full thickness
 - All skin elements are destroyed.
 - Underlying structures such as muscle and bone may also be damaged.
 - Initially painless as nerve endings are destroyed.
 - No hair follicles, sweat or oil glands left, so healing takes place by new cells migrating from the edges of the wound. Small burns may heal in this way, but a large wound may never heal and a skin graft will be necessary.

4. Scar Management

Scar Formation

Wounds heal by forming scar tissue. Initially the healed wound may appear flat and smooth. However, within the next three months dramatic changes may take place.

As burn wounds heal, new connective tissue (collagen) is formed. The blood supply to this new connective tissue is more rapid and greater than in the normal skin, which makes the scar look red in colour.

The increase in blood supply results in the collagen being formed at a much faster rate than it is broken down, and it becomes more adhesive. This results in the formation of whorles or bundles of collagen, which fuse together and push outwards making the scarring appear raised, hard and lumpy. This type of scarring is called hypertrophic scarring, and it can take up to two years to fully mature.

Unfortunately, it is not possible to prevent hypertrophic scarring. It is, however, possible to minimise its effects and improve the appearance of the scars through:

- Creaming and massage
- The wearing of pressure garments and/ or silicone gels.
- Exercise.
- Resuming normal daily activities as much as is possible

Creaming and Massage

Massage and the application of moisturising cream is a very important aspect of the ongoing care of a burn scar. One of the reasons for the use of moisturising cream is because the burn scar can become very dry due to the damage to the oil glands in the skin. A further reason is to help in reducing the scarring that has resulted, as the action of massage helps to encourage the collagen bundles to realign and flatten.

Moisturising cream should be applied at least three times a day to clean, dry skin, massaging thoroughly for at least ten minutes. The child will have been instructed in creaming and massage by the Burns Centre Team, and will need to be provided with a private room in which to carry this out at some point during the school day.

Pressure Garments

The application of continuous and controlled pressure through the use of custom-made elasticated pressure garments helps to control hypertrophic scarring and encourage the formation of smooth, soft scars.

To be effective, the garments need to be worn for at least 22 hours a day, and are to be removed only for bathing and to perform creaming and massage. The garments are designed to be tight fitting, but should not restrict activity or movement in any way. As hypertrophic scarring can take up to two years to fully mature, the child may be required to wear the pressure garment for this period of time. The child will need to attend appointments at the Welsh Centre for Burns or Burns Outreach clinic on a three monthly basis over this period for re-measuring and fitting of new pressure garments.

Silicone Gel

Small areas of scarring may be treated with silicone gel rather than a pressure garment. Silicone gel is a slightly sticky, gel like substance that can be applied to the scar like a plaster. It is thought that silicone gel hydrates the skin through the gradual time release of silicone fluid, to produce a soft, smooth, pale scar. Advice will already have been given on duration of use.

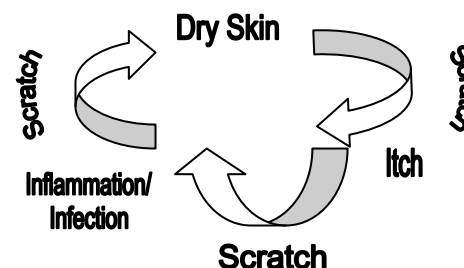
Silicone gel may also be used over stubborn areas of scarring underneath a pressure garment.

5. Blisters

Newly healed skin is a lot thinner and more sensitive than normal skin. As a result of this, the development of small blisters is not uncommon within the first few months after healing. The blisters may occur from excessive irritation from clothing or accidental bumps or bruises. Maintaining a good skin care regime can help prevent blisters from forming. If blisters do occur, seek advice from the school nurse or the child's GP. If the child is wearing pressure garments, a small non-stick dressing should be used to cover the wound to protect the blister from further damage. Silicone gel should not be applied to a blister. It can be re-applied once the blister has fully healed. If you are concerned that the blister is not healing, this should be discussed with the child's parents and their GP or the Burns Centre contacted for advice.

6. Itching

Unfortunately, itching is a common problem affecting both the donor site (an unburned area from which skin will have been taken if the child has had a skin graft) and the burned area, and is particularly distressing for children. It can be caused by dry skin, increasing scar tissue or the regeneration of nerve endings damaged during the burn injury. As the scars mature, the itching should gradually decrease. Again, wearing well fitting pressure garments and maintaining a good skin care regimen can help reduce itching. The child may need to apply an anti-itch cream periodically throughout the day and night.



9. Psychological Issues

Studies have shown that most children who survive burn injuries adapt positively, despite the huge lifestyle changes it can bring, and can lead happy and successful lives. This is largely dependent on the child's personality, and the way in which it is influenced by the reactions of family and other social contacts, as these reactions will influence the child's self perception.

Any unusual or changed appearance can cause others to react unintentionally in ways in which the child may find difficult to understand or respond to. This may result in withdrawal from social interactions leading to isolation and lack of social confidence, or problems with body image. The child will have been taught a straightforward, short, firm answer to questions and comments about their scar, but may need to be supported in explaining to others what happened to them and what the implications are. A direct, honest and sensitive approach, from you as a teacher, to questions from others can be imitated by the child and encourage the development of confident coping skills. This can increase the respect given by classmates and boost the child's self-esteem.

Regression in the child's learning and development sometimes occurs following a burn injury. Reverting to behaviours that brought comfort at an earlier developmental age is usually the child's way of coping with the difficult, stressful experience they have endured. This may show itself through lack of concentration, reverting to baby talk, thumb sucking, or tiring easily. It is normally only a temporary state and should be tolerated, with positive and age appropriate behaviour being praised. Reprimand may result in an increased or more prolonged period of regression.

7. Sun Exposure

Burn scars and donor sites are extremely sensitive to sunlight and will blister and peel more readily than normal skin. Direct sun exposure should therefore be avoided for at least one year following the burn injury. Pressure garments do not provide sun protection, so when the child is outdoors in the sun a sun block lotion should be applied to the burn scars underneath the pressure garment, and loose cotton clothing should be worn over the pressure garment. After a year, exposure to the sun can gradually be increased.

8. Exercise and Swimming

Scar tissue has a tendency to tighten and contract across joints. Whilst the child was in hospital, the physiotherapist would have performed regular stretches to try and prevent this. Physical exercise is now extremely important to maintain the range of movement of the joints after discharge.

Swimming is an excellent form of exercise and can be allowed as soon as the wounds are fully healed. Pressure garments can be worn whilst swimming, but should be rinsed thoroughly afterwards as chlorine may damage the fabric. The child must shower thoroughly after leaving the pool, as chlorine can dry the skin and exacerbate any itching. Moisturising cream should be applied after showering prior to applying dry pressure garments.

Generally, contact sports should be avoided for 12 weeks following discharge from the Welsh Centre for Burns. The child and his/ her carer will have been advised regarding this by the Burns Centre Team.

Initially you may find that the child functions quite normally on some days, but is tired and irritable on others. This may well be the result of disturbed nights because of nightmares or itching, and should settle with time. However, if you are concerned about the psychological status of the child, please discuss this with the child's parents, and contact the GP or the Burns Centre.

10. Useful Contacts

Welsh Dragon Burns Club
Dyfed Ward
Welsh Centre for Burns
Morriston Hospital
Swansea SA6 6NL
01792 703622
www.welshdragonburnsclub.co.uk

This club is open to any child between 7-17 years old who has sustained a burn injury. The cost of running the club is raised through fund raising activities which means that every child who wants to attend can. The club provides the opportunity to attend burns camp and family fun days, and so build a network of friends who share similar experiences in life.

Changing Faces Cymru
P.O. Box 48
Rhuthun
LL15 9AG
Tel: 0845 4500 240
Email: cymru@changingfaces.org.uk
www.changingfaces.org.uk

Changing Faces supports and represents people of all ages with disfigurements of all kinds, whether present at birth or acquired during an accident or illness. They aim to ensure that people with disfigurements have high self-esteem, access to the best health and social services, and equal rights and opportunities throughout their lives. They provide one-to-one counselling and advice, group workshops, self-help guides and videos.

Burns Survivors Association – UK
416 Outwood Common Road
Billericay
Essex
01277 631086
www.burnsurvivorsassociation.org.uk

This is an independent association for burn survivors, their families and friends. It aims to provide information on professional contact points, link existing local support groups and promote exchange of information and best practices in support services.