Encountering Personal Injury
Medical, Educational, Vocational and Psychosocial Perspectives on Disability

James A. Athanasou
The University of Sydney, Australia

Encountering Personal Injury is written for anyone who has professional contact with adolescents and adults who have a disability arising from a personal injury. The text provides a comprehensive introduction to the major injury groups for postgraduate students. It covers the conditions commonly experienced in everyday practice, such as traumatic brain injury, spinal cord injury, psychiatric impairment, mood disorder, anxiety and stress disorder, substance abuse, musculoskeletal injury, whiplash, back pain, amputation, burn injury, chronic pain, stroke, vision impairment or hearing impairment.

The text arose from a background of some 30 years’ teaching, research and clinical practice in this field. Each condition is introduced to the reader. Its educational, vocational and psychosocial implications are explored. Medical terminology is defined and explained. Anatomical and physiological illustrations are provided. Reports from court cases are used to provide realistic examples of the multiple effects of injury on learning, working and living.

A total of 24 clinical case studies, discharge summaries and medical reports provide a holistic and bio-psychosocial approach to disability. Examples of questionnaire and relevant assessment instruments are provided. This text is written in an informal, easy-to-read and straightforward style. There is no pre-requisite knowledge. It will find applications wherever personal injury is encountered in career development, vocational and rehabilitation psychology, rehabilitation counselling, social work, occupational therapy and physiotherapy.
Encountering Personal Injury
STUDIES IN INCLUSIVE EDUCATION
Volume 31

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Scope
This series addresses the many different forms of exclusion that occur in schooling across a range of international contexts and considers strategies for increasing the inclusion and success of all students. In many school jurisdictions the most reliable predictors of educational failure include poverty, Aboriginality and disability. Traditionally schools have not been pressed to deal with exclusion and failure. Failing students were blamed for their lack of attainment and were either placed in segregated educational settings or encouraged to leave and enter the unskilled labour market. The crisis in the labor market and the call by parents for the inclusion of their children in their neighborhood school has made visible the failure of schools to include all children.

Drawing from a range of researchers and educators from around the world, Studies in Inclusive Education will demonstrate the ways in which schools contribute to the failure of different student identities on the basis of gender, race, language, sexuality, disability, socio-economic status and geographic isolation. This series differs from existing work in inclusive education by expanding the focus from a narrow consideration of what has been traditionally referred to as special educational needs to understand school failure and exclusion in all its forms. Moreover, the series will consider exclusion and inclusion across all sectors of education: early years, elementary and secondary schooling, and higher education.
Encountering Personal Injury

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James A. Athanasou
The University of Sydney, Australia
This book is dedicated to the Estia Foundation for people with disabilities
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Welcome to Encountering Personal Injury. At first glance it might seem like a topic of narrow relevance but disability in one form or another affects more than one-fifth of the population. Disabilities are extensive and have many causes. One major cause is injuries.

The injuries that bring about a disability affect people at every stage of life but principally in adolescence and adulthood. This is mainly through motor vehicle accidents or workplace incidents but also through professional, public or other negligence. The effects are widespread – often there is a lifelong impact on health, education, employment, finances, family or self.

One way in which we address these consequences is through the field of rehabilitation counselling. Medical, educational, vocational or psychosocial rehabilitation counselling is an expression of care for another person. It is a belief in their potential to lead a meaningful life following a personal injury. The existence of this discipline is a feature of the extent to which we value human life and an indicator of how much we are a civil society.

I believe that we have a responsibility to assist as much as possible. For the rehabilitation counselling practitioner this requires some background knowledge but also awareness of the varied effect of an injury on the life of a person. This book is merely an introduction to this vast field.

It is directed towards an understanding of some implications of a disability that arise from a personal injury. Consequently, it does not deal with chronic illness, congenital or developmental disabilities. It serves mainly as an introduction to a select number of conditions: traumatic brain injury, spinal cord injury, psychiatric impairment, substance abuse, musculoskeletal injury, amputation, burn injuries, chronic pain, stroke, vision impairment or hearing impairment.
These conditions cover the vast majority of the adult and adolescent patients that I have seen in my own medico-legal practice in this field since 1989. My focus is upon their adjustment following an injury.

This book also arose from my lectures at the University of Sydney in the subject *Applied Psychosocial and Medical Aspects of Rehabilitation* in the Graduate Diploma and Master of Rehabilitation Counselling. I am indebted to Professor Elias Mpofu and Dr Michael Millington who gave me the opportunity to teach in their program.

The book is designed for a one-semester introduction to the field. Accordingly, the text will be most useful for those who are new to rehabilitation. There is no prerequisite knowledge.

The aim is to introduce you to various aspects of disability arising from injury. You will be exposed to a range of conditions that are common in rehabilitation services.

There is a twofold emphasis. The first is on extensive examples from my clinical practice. Secondly I also use judgements made in various court cases. They provide excellently written summaries of the facts surrounding an injury. Although their concern is often with an issue such as damages, liability, negligence or some point of law they are still useful for our purposes as they deal with real people and provide valuable descriptions of the consequences of an injury for a person. Moreover they are on the public record and therefore widely accessible.

I hope that this book is of some assistance in your studies and professional development. Please alert me to any errors or omissions.

As this book has grown out of my notes over an extended period of time, I may have neglected to cite a reference or a source and would appreciate the opportunity to rectify this in a future edition. Unless otherwise indicated all images in the text are sourced from Wikimedia Commons and I am grateful for this facility.

May I wish you all the best in your future studies and career in rehabilitation counselling.

*James A Athanasou*

*February 2016*
Are there enough injuries to justify a book on the topic of injury and disability? I think there are and probably far more than people realise. I can only cite some statistics from my locale but the picture might be the same elsewhere in developed nations.

Let me start with the world of work. There are around 11 serious workers’ compensation claims per 1000 employees. A serious claim is defined as an incapacity that results in a total absence from work of one working week or more.

It can also be worthwhile to look at the landscape of these injuries and their disabilities. These serious claims cluster almost entirely into musculoskeletal (90%). What comes under the heading of musculoskeletal? It is a broad category that comprises: (a) traumatic joint/ligament and muscle/tendon injury, (b) connective tissue diseases, (c) wounds, lacerations and internal organ damage, (d) fractures, (e) burn injury, (f) intracranial injury and (g) injury to the nerves and spinal cord injury.
CHAPTER 1

You would realise that injuries can also arise from other activities. There were about three casualties per 1000 people from road traffic accidents. Sport is another source of injuries with those playing sport spending a total of 79,000 days in hospital. The simple point of all these numbers is that whichever way one looks at it, injuries abound.

A meaningful starting point from which to explore injury and disability is through a case study. I have selected this as the start of our journey through an injury. It shows the wide-ranging role that an injury can play in a person’s life.

Case Study

Mr A is a 37-year-old male who was a self-employed, resort complex manager. He was injured in a motor vehicle accident when he was aged around 33 years. This person was a national triathlon competitor who was struck by a vehicle while training. The vehicle driver was found at fault but that is of little consolation.

For the record the patient’s injuries included, amongst others: pelvic fracture, fracture L1 vertebra, fracture right foot, fracture right acetabulum, sacroiliac joint disruption, pubic symphysis diastasis and fracture right talus (these terms are defined for you at the conclusion of this chapter).

He was airlifted by helicopter from the scene and spent four weeks in hospital but many months recovering. He described his present problems and disabilities as “ongoing neuropathic problems on right side and pelvis, lower back pain, psychological issues”. His whole person impairment was rated at 39%.

The effects of any injury, however, go well beyond the medical recovery.

He had to sell a business that was profitable. The tasks of management of a very large complex; the daily maintenance and dealing with people were too difficult. He was wheelchair bound for some five months and although assistance was hired the business started to become unprofitable. It was sold.
The family left the complex and returned to their previous home. There was a profit from the sale of the business but without any ongoing income, his wife went out to work. He is now applying for a partial disability support pension.

People react to an injury in varying ways. For him, this injury became a hurdle to overcome. Maybe it has something to do with a determined, high achieving sportsperson, who was used to competing in long distance triathlons (3.8 km swimming, 180 km cycling and 42 km running).

Injuries typically have an impact on education and training. He had a trade background but in his career had progressed to project management. Prior to the accident he had completed a real estate licence that was required for holiday lettings in a resort. Many years earlier, he had also undertaken sports massage and anatomy course at a private college.

Given his sporting background and longstanding interest in fitness and health, he enrolled in a sports management diploma after the accident. He did this with a view to converting to a degree in sports science. He passed the first year and was accepted into the degree course. This course was self-funded at a private university. He is now seeking a Commonwealth funded place at a public university.

Injuries also have an impact on employment. When speaking on behalf of the Careflight rescue service that airlifted him from the scene of the accident and his own experiences in recovering, he was approached by the chief executive officer of a professional football club who was impressed by his account and offered support.

An unpaid work trial was arranged in the rehabilitation division of a national football team. One of the players that he treated went on to become head coach of a semi-professional team. He was offered a part-time position as the rehabilitation coach, designing exercises for injured players to ensure that they return as soon as possible. These programs are formulated within the restrictions outlined by physiotherapists. At present, he treats six players.

His Linkedin page provided these details about him:

After a major accident in June of 2012 which left me seriously injured a career change was required. I decided to undertake study in an area that has been my passion for over 20 years, Sport and Exercise Science. Through this study, I have been able to commence employment with some AFL teams and am now working in their injury Rehabilitation and conditioning areas. Working alongside the players and coaches, I feel I am able to provide a support and guidance for the players that has been gained from my own experiences. I feel that I am in a position that I truly love and now see a day at work as an extremely fulfilling and enjoyable experience. I hope to one day get back to a competitive level in Triathlon and compete at the Hawaii Ironman but until then I am focused on my recovery and getting myself back on track physically (sic).
In our work it would be inappropriate to consider only the medical, educational or vocational aspects of injury. Some analysis of overall well-being and all its components may be helpful.

The EUROHIS Quality of Life Scale gives me a brief guide to some key aspects of living. It considers health and quality of life in the last two weeks. I used it as a brief survey rather than as a scale. He rated his overall quality of life in the last few weeks as neither poor nor good. He is very dissatisfied with his health and dissatisfied with his ability to perform daily living activities. He has little enough energy for everyday life. He does not have at all enough money to meet his needs. He is neither satisfied nor dissatisfied with his conditions of living.

This case history covers some medical, educational, vocational and psychosocial aspects of an injury that are the focus of this book. By necessity, this is a brief account and there is much more one could say about this case. For instance, I have omitted personal and social details, the results of functional ability assessments, the evaluation of mental status, descriptions of appearance, post-accident education and employment, as well as relevant medical opinions. The case study is used merely as an example of the patients that I encounter on a day-to-day basis. Please note that there are links between the various elements, from medical outcomes through psychosocial influences to educational and vocational consequences.

A feature of this case is the remarkable determination in the face of massive injuries. This patient had a clear focus on rehabilitation and recovery. Not everyone approaches life this way. So what will happen to our patient in Case A in the future? Who knows! It is still early days.

It has been three years since the accident but still too soon to hazard any guess. Hopefully he will be able to forge a new future and this is where you or I can assist in terms of some advice or support.

The fact is that injuries that result in a disability are complex. This case shows that they are multi-faceted and ongoing. How typical is this case? It is not. Why?

It is because no case is typical – each one has its own intricacies. It comes packaged as a unique medical, educational, vocational and psychosocial bundle. Figure 1.1 is a representation of these four overlapping spheres that are the interest of this book.

Rehabilitation deals with human beings with all their individual differences and in all their different contexts. It is a unique field. It operates at the interface of many different disciplines (medical, psychological, educational, vocational and counselling). In this book you will be combining knowledge, skills and experiences from a variety of fields.

Concluding Comments

Helping people with an injury and disability is as much a craft as it is a science. For the science part there is much to learn and for the craft part there is much to practise. A book is useful but clinical experience is by far the greatest teacher. Over the years you will develop considerable insight through the many cases you encounter. You
will come face to face with the pervasive nature of human injury together with the complexities of medicine. You will be exposed to the varied personal and social circumstances that make up each person’s life. You will deal with people who have vastly different temperaments or values. You will meet some very nice people and learn from the book of life. This is a great privilege.

I doubt that you will ever get bored – tired or overburdened almost certainly but bored, probably not. But enough of this sentimentality, we have work to do. In the next chapter I move on to some evidence of the widespread nature of injuries and I will give you some working and workable definitions of disability.

**Terminology**

*pelvic fracture* – often life-threatening injuries because of the extensive bleeding. An external fixator may be used. This permits attention to the internal injuries. If these injuries are addressed, the fracture usually heals well. People may walk with a limp for several months because of damage to the muscles around the pelvis. http://www.orthoinfo.aaos.org/videoMenu.cfm

*L1 vertebra* – The L1 vertebra (1st lumbar vertebra) is the smallest and most superior of the lumbar vertebrae. As the first vertebra in the lumbar region, the L1 vertebra bears the weight of the upper body and acts as a transition between the thoracic and lumbar vertebrae. http://www.innerbody.com

Figure 1.1. The four overlapping spheres of disability and injury
• acetabulum – the deep cup-shaped cavity on the side of the hipbone into which the ball-shaped head of the femur fits into this cavity.
• sacroiliac joint – the joint in the bony pelvis between the sacrum and the ilium of the pelvis.
• pubic symphysis diastasis – the separation of normally joined pubic bones, as in the dislocation of the bones, without a fracture.
• talus – a bone in the collection of bones in the foot.

NOTES

3 Op. cit., Table 6, p. 16.
6 This case study was provided with the kind permission of Mr Paul McRobert.
8 I work exclusively in a medical setting and often use the word “patient” rather than “client.”
CHAPTER 2

DISABILITY

The purpose of this chapter is to provide some details about the nature of disability. I want to offer you a reasonable but by no means perfect framework for defining disability. This will set the scene for the specialised chapters that follow.

This framework is provided in terms of questions that you might want to answer for yourself about any cases that you encounter. The first question is whether a person has a disability.

Does This Person Have a Disability?

There are many descriptions of disability with different philosophical origins. I acknowledge the value of these approaches but want to simplify things for you.

The fundamental question for me is whether a person has a disability and in order to answer this I use the formal descriptions of the Australian Bureau of Statistics as my guide. I use it because this is an official classification and is standardised. It has a substantive information base on disability that has been collected over time. The approach is practical (not perfect) and has been applied on a large scale in Australia and internationally.
In the Survey of Disability, Ageing and Carers a disability is defined as a limitation, restriction or impairment, which has lasted, or is likely to last, for at least six months and restricts everyday activities. Typically this is associated with a medical diagnosis.

What Type of Disability?

The next question I would ask you about someone with a disability is: “What type of disability?” You might answer with a specific medical diagnosis but I am looking more for a general category of disability (i.e., what the person cannot do). Disabilities are wide-ranging and cover:

- loss of sight (not corrected by glasses or contact lenses);
- loss of hearing where communication is restricted, or an aid to assist with, or substitute for, hearing is used;
- speech difficulties;
- shortness of breath or breathing difficulties causing restriction;
- chronic or recurrent pain or discomfort causing restriction;
- blackouts, seizures, or loss of consciousness;
- difficulty learning or understanding;
- incomplete use of arms or fingers;
- difficulty gripping or holding things;
- incomplete use of feet or legs;
- nervous or emotional condition causing restriction;
- restriction in physical activities or in doing physical work;
- disfigurement or deformity;
- mental illness or condition requiring help or supervision;
- long-term effects of head injury, stroke or other brain damage causing restriction;
- receiving treatment or medication for any other long-term conditions or ailments and still being restricted;
- any other long-term conditions resulting in a restriction.
By way of background it might be of interest for you to see the distribution of people across various conditions. You might have guessed that physical conditions predominate. They account for about four-fifths of all main long-term health conditions. Mental and behavioural disorders represent the other one-fifth of the 4.2 million persons with a disability (18.5% of the population). The distribution of disabilities across the major conditions is indicated in Table 2.1 and is obtained from Disability, Ageing and Carers, Australia.

Some readers might have overlooked the fact that diseases of the musculo-skeletal system and connective tissues are by far the largest disabling condition in Australia. They account for one-third of all persons with a disability. This category dwarfs all others by comparison. Recall that this dominance of musculoskeletal conditions across disability in the general population was also consistent with the picture for workers’ compensation.

### Table 2.1. Major long-term health conditions – Australia, 2012

<table>
<thead>
<tr>
<th>Main condition</th>
<th>Proportion with disability (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer, lymphomas and leukaemias</td>
<td>1.5</td>
</tr>
<tr>
<td>Endocrine, nutritional and metabolic disorders</td>
<td>3.3</td>
</tr>
<tr>
<td>Diseases of the nervous system</td>
<td>6.6</td>
</tr>
<tr>
<td>Diseases of the eye and adnexa</td>
<td>2.0</td>
</tr>
<tr>
<td>Diseases of the ear and mastoid process</td>
<td>6.9</td>
</tr>
<tr>
<td>Diseases of the circulatory system</td>
<td>7.7</td>
</tr>
<tr>
<td>Diseases of the respiratory system</td>
<td>4.2</td>
</tr>
<tr>
<td>Diseases of the digestive system</td>
<td>1.8</td>
</tr>
<tr>
<td>Diseases of the musculo-skeletal system and connective tissue</td>
<td>33.5</td>
</tr>
<tr>
<td>Congenital and perinatal disorders</td>
<td>0.9</td>
</tr>
<tr>
<td>Head injury and acquired brain damage</td>
<td>1.0</td>
</tr>
<tr>
<td>Other injury, poisoning and external causes</td>
<td>6.0</td>
</tr>
<tr>
<td>Other physical conditions</td>
<td>5.5</td>
</tr>
<tr>
<td>Psychoses and mood affective disorders</td>
<td>6.8</td>
</tr>
<tr>
<td>Neurotic, stress-related and somatoform disorders</td>
<td>4.4</td>
</tr>
<tr>
<td>Intellectual and developmental disorders</td>
<td>5.6</td>
</tr>
<tr>
<td>Other mental and behavioural disorders</td>
<td>2.3</td>
</tr>
<tr>
<td>Total (’000)</td>
<td>4,234.2</td>
</tr>
</tbody>
</table>

*Source: Australian Bureau of Statistics, Disability Ageing & Carers, Catalogue No. 4430.0*
CHAPTER 2

How Do We Rate the Extent of a Disability?

How do we rate the extent of a disability? Again there are many different approaches but I have used that of the Government Statistician. Disability status can be characterised according to a series of graded categories from no reported disability to profound core activity limitations.

The core activities are communication, mobility and self-care and the categories are defined in Table 2.2. Around 16% of the population reported a disability that had specific limitations or restrictions. So, some people have a disability but no limitation.

The limitation means a person needs help with, or uses aids or equipment for the activity and the overall level is determined by their highest level of limitation in these activities.

Employment Restriction

A schooling or employment restriction is claimed by around 7% of the population. Four levels of employment restrictions are determined based on whether a person needs help, has difficulty, or uses aids or equipment in their employment. The four levels of limitation are:

- **Profound** – the person’s condition permanently prevents them from working
- **Severe** – the person: requires personal support; needs ongoing supervision or assistance; requires a special disability support person; receives assistance from a disability job placement program or agency
- **Moderate** – the person is restricted in the type of job and/or the numbers of hours they can work or has difficulty in changing jobs
- **Mild** – the person needs: help from someone at work; special equipment; modifications to buildings or fittings; special arrangements for transport or parking; training; to be allocated different duties
Table 2.2. Core activity limitation

<table>
<thead>
<tr>
<th>Core activity limitations</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profound</td>
<td>the person is unable to do, or always needs help with, a core activity task</td>
</tr>
<tr>
<td>Severe</td>
<td>the person sometimes needs help with a core activity task, or the person has difficulty understanding or being understood by family or friends, or the person can communicate more easily using sign language or other non-spoken forms of communication.</td>
</tr>
<tr>
<td>Moderate</td>
<td>the person needs no help, but has difficulty with a core activity task</td>
</tr>
<tr>
<td>Mild</td>
<td>the person needs no help and has no difficulty with any of the core activity tasks, but uses aids or equipment, or has one or more of the following limitations:</td>
</tr>
<tr>
<td></td>
<td>• cannot easily walk 200 metres</td>
</tr>
<tr>
<td></td>
<td>• cannot walk up and down stairs without a handrail</td>
</tr>
<tr>
<td></td>
<td>• cannot easily bend to pick up an object from the floor</td>
</tr>
<tr>
<td></td>
<td>• cannot use public transport</td>
</tr>
<tr>
<td></td>
<td>• can use public transport, but needs help or supervision</td>
</tr>
<tr>
<td></td>
<td>• needs no help or supervision, but has difficulty using public transport.</td>
</tr>
</tbody>
</table>

Educational Restriction

Four levels of schooling restrictions are also determined based on whether a person needs help, has difficulty, or uses aids or equipment in their education. The four levels of educational limitation are:

- **Profound** – the person’s condition prevents them from attending school
- **Severe** – the person: attends a special school or special classes; receives personal assistance; receives special tuition; receives assistance from a counsellor/disability support person
- **Moderate** – the person: often needs time off from school; has difficulty at school because of their condition(s); has special assessment procedures
- **Mild** – the person needs: a special computer or other special equipment; special transport arrangements; special access arrangements; other special arrangements or support services

The advantage of this approach is that you are able to use standardised categories that are relatively straightforward. Following a medical diagnosis of impairment, this approach allows you to describe (a) whether a person has a disability, (b) what they cannot do, (c) whether the disability is profound, severe, moderate or mild,
(d) whether there is an employment restriction, and (e) whether there is an educational restriction.

Certainly there are more sophisticated and elegant approaches but this is a useful start. I remind you that all this hinges upon a medical diagnosis of impairment. It should now be possible for you to take a case, classify the disability using the official statistical criteria and categorise the restrictions.

Summary

In this chapter I outlined a straightforward approach for the definition of disability. The different types of disability were described and the categories of restrictions from no disability to profound were outlined. In the next chapters we commence to examine specific types of injuries and disabilities.

NOTES


3 Australian Bureau of Statistics, op. cit.
Of all the injuries that I encounter, burn injuries are the most memorable. I can recall almost all that I have seen throughout my career. The names have been forgotten but the general details of each case seem to be etched in my memory.

Why is this? I am not sure. Maybe it is because the circumstances of each case are unique. Maybe the disfigurement that ensues is unforgettable. Certainly the impact of a burn injury on one’s life can be amongst the most devastating of all injuries. Burn injuries are life threatening and have major educational, vocational and psychosocial consequences.

A burn injury can be caused by sources other than heat. These include scalds, freezing, inhalation, electricity, lightning, explosions, radioactive or chemical materials. Burn injuries will vary in intensity and seriousness from a minor scald to death. They involve damage mainly to the skin but also to other parts of the body.

Burns are quite common injuries but are not always compensable injuries. Their relevance for rehabilitation arises from their major physical and psychological consequences.
In a Parliamentary Roundtable Forum on Burns Prevention it was reported “burn injuries should be considered a chronic disease due to the long-term social and health impacts that burn injuries have on the individual, their family and the Australian society as a whole”.¹

**Burn Injury**

The World Health Organisation has provided a formal definition of a burn injury:

A burn injury of the skin occurs when some or all the different layers of cells in the skin are destroyed by a hot liquid (scalds), a hot solid (contact burns), or a flame (flame burns). Injuries of the skin and other tissues due to ultraviolet/infrared radiation, radioactivity, electricity, or chemicals are also considered to be burns.²

Burns are important because they affect the skin, which is the body’s largest organ.

**The Skin**

The skin is made up of layers that protect the body’s inner structures but also interacts with the external environment biochemically. Figure 3.1 is a model of the skin that shows the three main layers and relates them to the degree of injury.

![Figure 3.1. Layers of the skin and burn wound classification](image)

The thin top layer of skin averages only 0.2mm thick. The inner layer of skin beneath the epidermis contains blood vessels, nerves, lymphatics, hair follicles, sweat glands and cells for wound healing. A sub-cutaneous (i.e., relating to or affecting the skin) layer of fat is below the dermis. This provides insulation and gives shape or contour over the bone.
Burn wounds are classified according to the depth of injury, location of the burn and the extent of the body surface area involved. The next section deals with the categorisation of burn wounds.

**Burn Wound Categorisation**

There are three commonly recognised levels of burns: first (superficial), second (superficial or deep) and third (full thickness).

- **Superficial** (first degree burns) result in damage to the top layer. They extend into the epidermis. The causes can include sunburn or scalding. There are no blisters and the skin appears as dry pink. They can be painful, tender and sore. These burns tend to heal within 3–7 days. There are pigment changes. There may be discoloration but no skin graft is needed.

- **Partial thickness** (second degree burns) extend into the dermis. The causes can include scalding, burns or chemicals. The skin appears as moist or wet with oozing blisters. It varies from white to pink or red. The sensation can be very painful. The healing time varies from 10–21 days for a superficial partial thickness burn (21–35 days for a deep second degree burn). It may require excision and a skin graft. There is minimal scarring in a superficial partial thickness burn but there will be some scarring and pigment changes in a deep partial thickness burn.

- **Full thickness** (third and fourth degree burns) – all layers of the skin are destroyed. The causes include chemical, electric, hot liquids, hot surfaces and contact with flames. The skin appearance is leathery or dry. There is a charred appearance. There is no elasticity in the skin and the skin will not blanch when pressure is applied. The fourth degree burn extends into the muscle and bone. The nerve endings are generally destroyed so there is little or no pain at the site of the full thickness burn but the surrounding partial thickness burn is very painful. A full thickness burn can require months to heal. Skin grafts are required. There will be significant scarring and it is likely to be hypertrophic.³

**Calculation of Burned Body Surface Area**

The total body surface area is another basis for describing a burn. One approach to describing the extent of a burn is the Rule of Nines shown in Figure 3.2. There are more exact methods that adjust for age.

In the Rule of Nines the body is apportioned as follows: head and neck (9%), each arm (9%), each leg (18%), the anterior trunk (18%), posterior trunk (18%) and genitalia (1%). A major burn is greater than 10 percent total body surface area. Superficial burns are not involved in the calculation of burned body surface area.

As an example, if the chest and abdomen was burnt the percentage would be 18. The median lethal dose resulting in death has been reported as 80% total body surface area.⁴
CHAPTER 3

Medical Implications

The damage from a burn injury can be described as relatively minor to life threatening. Medical recovery from a burn injury traverses a critical phase (e.g., resuscitation), an acute phase (e.g., medical stabilisation) and then an outpatient phase (e.g., continuation of therapy).

The complications from a burn injury depend upon the severity of the burn. Some of the complications of burn injuries can include: shock, sepsis, pulmonary complications (e.g., lung problems from smoke inhalation), acute renal failure, stress ulcer, heart failure, cerebral inflammation, heat loss because the skin regulates body temperature or infection.

A large burn injury may require reconstructive operations over several years. It involves a long period of rehabilitation. Along with these medical complications there are a range of psychosocial implications.
Psychosocial Implications

As part of the medical rehabilitation there is the need to address the cosmetic disfigurement and any adverse emotional effects. These will depend on the extent, nature and location of the burn injury but also on a range of other individual factors.

Generally, the burn injury poses a threat to personal attractiveness and the longer the burn takes to heal the more likely it will leave permanent scars. Burns taking more than 2–3 weeks to heal or requiring grafting will scar. Typically, body image dissatisfaction is predicted by the visibility of scarring, being female, the importance of appearance and one’s manner of coping.

By and large, burns are emotionally devastating. There is a psychological impact during the acute phase of treatment as well as longer term adverse emotional effects. This occurs due in part to the unexpected nature of the injury, the prolonged recovery process, the disruptions in one’s life, separation from family and friends and the guilt or mourning that occurs.

Many patients will experience trauma symptoms (e.g., disturbed sleep, flashbacks). A person’s response to these varies dramatically, and as such some may require long term counselling with regards to post traumatic stress disorder.

Distress rather than a psychiatric impairment is a widespread response to a burn injury. Askay and Patterson pointed out that for the most part the symptoms of PTSD and depression “…will subside over time with no treatment and will not develop into a diagnosable disorder”.

They described adjustment during the outpatient phase as a protracted process of developing capability within the boundaries of the injury. Moreover some existing assumptions are being challenged, namely that the extent or size of the burn is directly related to adverse outcomes.

Educational and Vocational Implications

Return to work or education is a tangible gauge of rehabilitation. Any return to education or work is influenced by the need for frequent hospitalisations, treatment or surgical procedures.
There are also factors related to the nature of the pre-injury occupation itself, the extent and location of the burn injury, and the attitudes of others. The burn injury may result in a contracture that may reduce manual dexterity. Some work environments (e.g., hot, cool) are not suitable.

The available evidence indicates that working conditions (temperature, humidity, safety) and psychosocial factors (nightmares, flashbacks, appearance concerns) become important issues in those with long-term disability arising from burn injuries. Around 28% of all burn survivors never return to any form of employment.8

The following case study of a burn injury appeared in several news sources and highlights some of the medical, psychosocial and vocational aspects of a burn injury. I have adapted and combined the news reports liberally as a partial indicator of the widespread consequences of a burn injury.

Case Study9

In October 2014, a cosmetics company and territory government agreed to pay three men $6.7 million compensation. The three men were electrical contractors. They were transporting electrical supplies through an enclosed space to their worksite.

They suffered severe burns to their faces, hands and bodies in a fireball.

The blast had been caused when pressurised aerosol cans were shredded by an industrial machine. This cosmetic waste released a highly flammable vapour.

One of them told the Canberra Times he noticed a strong perfume scent. Moments later, he was hit by a massive fireball. The intense heat melted his skin.

This man was 24 years old at the time. He suffered the worst injuries in the explosion. There is scarring on his hands, arms and face.

He ran to a nearby work shed, where he remained under a shower until ambulance officers arrived. He was sedated. He was airlifted to Sydney’s Royal North Shore Hospital and placed in an induced coma.

He is now 28. He described some of the medical consequences of a burn injury. These come about because the skin controls body temperature. Prolonged exposure to sunlight is harmful for him. Constant nerve pain requires regular use of pain killers.10
There are also psychosocial consequences. Cosmetic disfigurement is typically an issue with a burn injury. This relates to being self-conscious about appearance in public. There was damage to his head, legs, arms, and lungs.

Depression was another consequence. He told reporters that the emotional impact was the most difficult hurdle to overcome: “I’ve started to realise these are the injuries I have to put up with for the rest of my life; it’s not going to get any better… It’s been a big strain in my mother and my girlfriend and I’m just so happy to have this whole situation behind us.”

He has been unable to work. He hoped to retrain in the building industry.

This example highlights some general features of a burn injury. Of course there is much more to burn injury rehabilitation.

Exercise

The medical, psychosocial and vocational aspects of a burn injury were mentioned in a recent case from the South Australian Industrial Relations Court. This was a case where a young employee received burn injuries from hot cooking oil while working at a fast food restaurant. The judgement from the Court included the contents of the victim’s impact statement and it summarises the various personal consequences. Classify these as medical, psychosocial or vocational (allow for some overlap).

1. he did return to work but as he could not face going anywhere near the area where he was injured and he could not stand the smell of cooking oil he ceased working;
2. he had time off work and was not cleared to return to work physically speaking for two months;
3. he lost friends due to the look of his injury and he became anti-social;
4. on a permanent basis scarring will remain together with occasional pain and also loss of partial feeling in his arm and hand on the right side due to nerve damage;
5. other loss or damage as a result of the incident includes loss of employment and being unable to obtain other employment due to depression and low self-esteem issues;
6. other than physical injuries suffered from severe depression to the point where he could not face being in that work environment so he resigned from his employment;
7. physically injured, namely third degree burns from elbow to fingers on right arm and also on right side around rib cage area;
8. the injuries impacted on his ability to sleep due to the medication and the pain;
9. treatment included skin grafts and antibiotics and pain relief. The skin grafts covered the right hand and forearm and right side torso.

Answer

Medical – 4, 7, 8, 9; Psychosocial – 3, 5; Vocational – 1, 2, 5, 6
Readers are reminded that while many professions may be involved in the treatment and rehabilitation of a burns injury as well as the injuries outlined in the subsequent chapters, the specific diagnosis and initial treatment is largely a medical issue. Any symptoms or signs outlined in this chapter or subsequent chapters are not an authoritative guide to diagnosis or treatment or outcomes.

NOTES


6 op. cit., p. 110.

7 op. cit., p. 112.


12 *Dwyer v Hungry Jacks Pty Ltd* [2015] SAIRC 2 [45].