

The needs of people with diabetes and other chronic conditions in natural disasters and emergencies

A guide for emergency services, local councils
and the not-for-profit sector

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Contents

Acknowledgements	4
Foreword	5
Executive summary	7
Part 1: Diabetes management in natural disasters or emergencies	9
Natural disasters & emergencies overview	10
Diabetes overview	12
Diabetes management in natural disasters & emergencies	13
Medications	14
Insulin	15
Blood glucose monitoring	17
Hypoglycaemia	18
Hyperglycaemia	20
Ketone monitoring	21
Mental health	22
Nutrition	24
Physical activity	25
Diabetes & potential complications	26
Part 2: Chronic conditions management in natural disasters or emergencies	29
Chronic conditions overview	30
Considerations for chronic conditions	33
Part 3: Key messages for people with diabetes	37
Key messages for people with diabetes	38
Appendix 1: Relationship to other documents	41
Appendix 2: My diabetes plan for natural disasters and emergencies	42
Appendix 3: Glossary	43
Appendix 4: Abbreviations and common acronyms	45
Appendix 5: Looking after yourself (volunteer and support people)	46
Appendix 6: Additional resources	47
Appendix 7: State and territory authorities	49
References	52

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Foreword

Many Australians live with chronic conditions, such as diabetes mellitus. Natural disasters and emergencies such as bushfires and cyclones can worsen the health of a person with diabetes.

Preparedness and response during and after a disaster or emergency are aided by careful planning at the individual, community and national level. Recent natural disasters in Australia highlighted a variable level of disaster readiness and response at all levels.

In 2015 an Expert Reference Group was established and a set of resources that would support and educate individuals, community and the relevant authorities were developed. These resources addressed the following:

- » The need to develop plans for individuals to manage the risks of the sudden impact of a disaster or emergency on the management of their diabetes and/or other chronic condition.
- » The need to have appropriate resources to assist the implementation of individual self-management plans after a natural disaster or emergency.
- » The need for a broad community education program having regard for the large number of individuals affected by diabetes and other chronic conditions in natural disasters or emergencies.

One of the outcomes was the development of this guide. Now, in 2021, the guide has been updated to reflect current knowledge and guidelines for disaster management.

The intent of the guide is to reduce morbidity and mortality of those with diabetes and other chronic conditions in natural disasters and emergencies, and, at the same time, minimise the strain on hospital resources.

I extend my thanks to the members of the 2015 Expert Reference Group who first contributed to the development of this resource. Many thanks also to those who provided their feedback for this latest version of the booklet (see acknowledgments).

In addition to natural disasters and emergencies, we are now also faced with pandemics and the impact they have on the management of chronic conditions such as diabetes. For more information on managing diabetes during pandemics such as COVID 19, go to [health.gov.au](https://www.health.gov.au) and [ndss.com.au](https://www.ndss.com.au)



Susan Davidson
Chief Executive Officer
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Executive summary

Disasters are unpredictable and destructive. They can cause significant damage, injury, illness, loss, trauma and grief. Australia's diverse landscape means that natural disasters such as bushfires, floods, severe storms, heatwaves, earthquakes and tropical cyclones occur regularly across the continent. Research indicates that the intensity and frequency of disasters is expected to be on the rise in the future.¹

Disasters can also have long-term effects on the country's economy, health and wellbeing. It is estimated that natural disasters cause more than \$1.14 billion in damages to Australian business, homes and infrastructure each year.¹ People affected by disasters can also have an increased risk of developing mental health and social problems.²

Despite there being a significant increase in morbidity and mortality in those with chronic conditions, the main focus in disaster response and recovery has been on acute medical conditions and first aid.³ Over recent years, there has been a shift to considering the effects of natural disasters on people with chronic conditions when planning for emergencies and natural disasters.⁴

Raising awareness of the importance of self-management is an integral part of keeping people with diabetes and other chronic conditions out of both the hospital system and the immediate response units after a natural disaster. This helps keep those limited resources that may be available to those who require immediate medical attention for acute conditions.

The importance of having a self-management plan⁵ in place for a person with diabetes or other chronic conditions is imperative in these situations. However there is still a significant proportion of the population that will remain unprepared. This is particularly the case amongst high-risk populations for example, older people.

People who are normally resilient and well-versed at self-managing their condition can experience

difficulties in managing that condition during an emergency, due to the interruption of their normal support systems. We know that recovery from an emergency can take many years – affecting individuals and communities in very different ways. Recovery time can in some instances, be shorter for those people who have spent time pre-planning for a natural disaster or emergency.

The target audience for this guide is those organisations and personnel who deal with natural disasters and emergencies during the planning stages such as local disaster management groups (local council) as well as those who deal with 'on-the-ground' situations after a natural disaster has occurred, such as those managing evacuation centres.

This guide focuses on diabetes, however it also considers disaster management and the needs of people with chronic conditions more generally, as many people with diabetes have other co-existing chronic conditions.

Appendix 1 lists the relationships between this guide and other relevant documents.

Appendix 2 provides a copy of the National Diabetes Services Scheme consumer resource **My diabetes plan for natural disasters and emergencies** as referred to in this guide. A copy of the plan is available from ndss.com.au or call the NDSS Helpline **1800 637 700**.

Appendix 3 includes a glossary of important key terms used throughout the guide.

Appendix 4 lists common abbreviations and acronyms.

Appendix 5 includes a list of further resources relating to diabetes and mental health care.

Appendix 6 includes information for volunteers and support people working on the ground after a natural disaster or emergency to enable them to consider their own mental health care.

Appendix 7 includes a list of all state and territory agencies and authorities who respond to the different types of natural disasters and emergencies throughout Australia.

This guide has been broken into three key components:

Part 1: Diabetes management in natural disasters or emergencies	Part 2: Chronic condition management in natural disasters or emergencies	Part 3: Key messages for those with diabetes
Target audience: <ul style="list-style-type: none"> For those who are working 'on-the-ground' after a natural disaster or emergency and dealing with a person with diabetes. 	Target audience: <ul style="list-style-type: none"> For local councils, emergency services and the not-for-profit sector involved in disaster and emergency planning For those involved in the coordination and management of evacuation centres after a natural disaster or emergency. 	Target audience: <ul style="list-style-type: none"> For people with diabetes, or those who are discussing planning requirements with people with diabetes in natural disasters or emergencies.
Content overview: <ul style="list-style-type: none"> General overview - natural disasters & emergencies – general overview Diabetes overview Diabetes management in natural disasters & emergencies Medications Insulin Blood glucose monitoring Hypoglycaemia Hyperglycaemia Ketone monitoring Mental health Nutrition Physical activity Potential complications 	Content overview: <p>An overview of chronic conditions:</p> <ul style="list-style-type: none"> Diabetes Chronic respiratory disease Cardiovascular disease Cancer Kidney disease <p>Considerations of the requirements for a person with a chronic condition:</p> <ul style="list-style-type: none"> Communication Equipment Food and water Housing Medications Sanitation Services Workforce 	Content overview: <ul style="list-style-type: none"> Key considerations for self-management of diabetes before, during and after a natural disaster or emergency. Proactive planning & preparation before, during and after a natural disaster or emergency.



Part 1: Diabetes management in natural disasters or emergencies

Natural disasters & emergencies overview

This chapter has been developed for those who are working ‘on-the-ground’ after a natural disaster or emergency and dealing with a person with diabetes.

Disasters, with their unpredictable and destructive nature can often cause significant damage, injury, illness, loss and trauma to the population. Australia has a diverse landscape and that makes it vulnerable to a range of natural disasters such as bushfires, heatwaves, floods, severe storms, tropical cyclones and earthquakes.

Research indicates that the intensity and frequency of disasters is expected to increase in the future.¹ With this knowledge, thorough and comprehensive disaster planning by all levels of government, relevant agencies, individuals and communities is of major importance. Lessons learned from past events indicate the importance of disaster preparation and planning in reducing the overall impact of a disaster or emergency.

A disaster often results in the destruction and deterioration of essential public health infrastructure. This can interrupt treatment and care for people with chronic conditions (Figure 3 on page 32). A lack of treatment and care for even a short period for people with chronic conditions can result in severe worsening of the condition and preventable death.⁶ The impact on those at greatest risk varies according to the chronic condition. It is imperative that all people with a chronic condition have a well-prepared care plan which is up to date and addresses what to do in a disaster or emergency situation.

Planned emergency relief can be provided in a variety of locations including at or near the site of an emergency, to communities that become isolated or cut off by an emergency or in an established relief setting, such as an emergency relief centre.

Emergency relief consists of a number of activities that should be planned. Emergency relief includes:

- » community information
- » psychosocial support
- » health services
- » reconnecting families and friends
- » shelter
- » food and water
- » non-food items (material aid)
- » emergency financial assistance
- » animal welfare
- » harnessing goodwill.

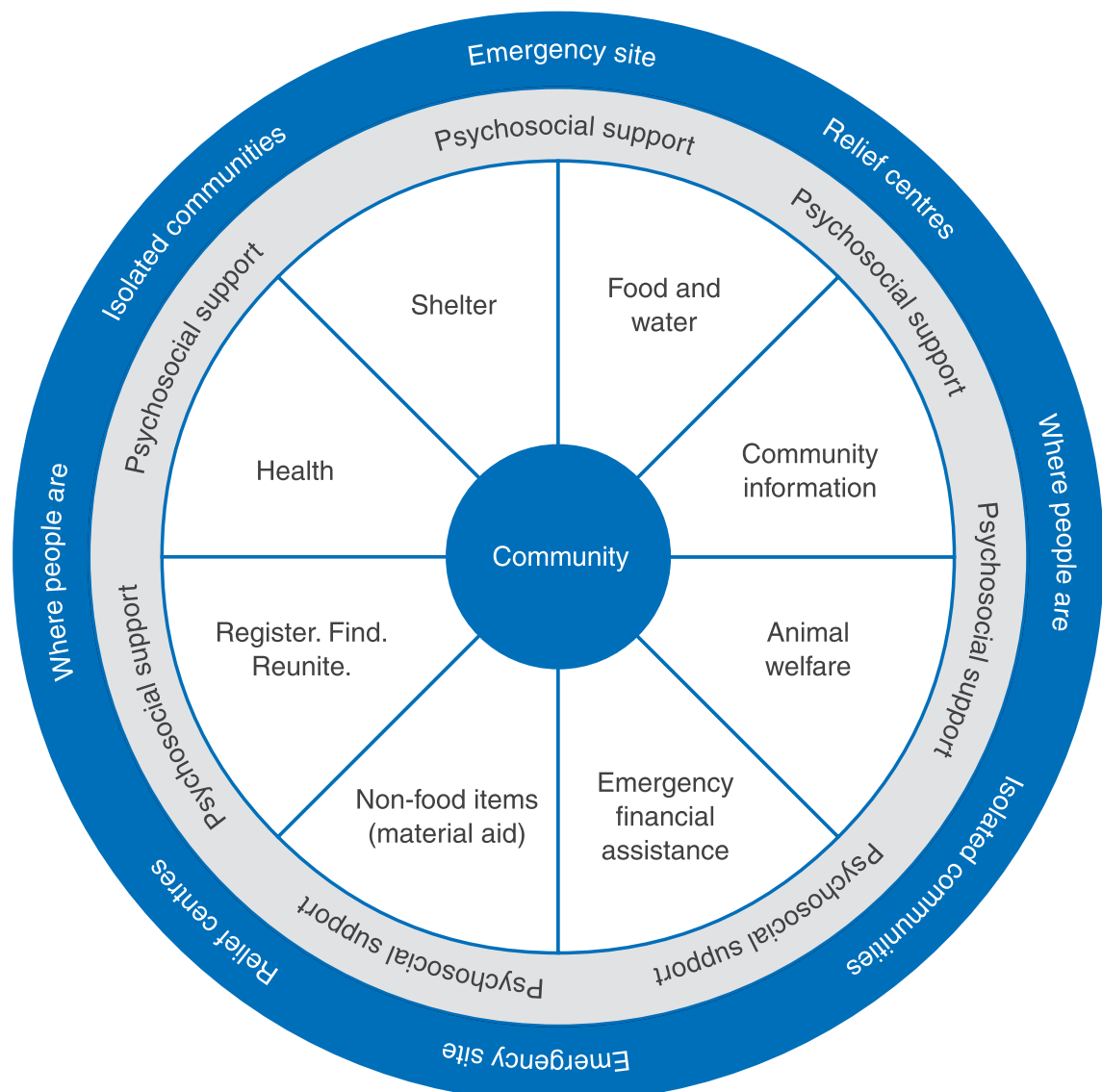
Relief activities are often managed by lead not-for-profit agencies such as Red Cross, Anglicare and Salvation Army and these agencies are responsible for developing, maintaining and carrying out pre-operational planning, with the state government overseeing the coordination of all activities. These activities should include integrated disaster planning between the acute and primary health care sectors.

Emergency relief is a collaborative effort that requires coordination between community, government, not-for-profit and private sectors. Coordination in a disaster is the way in which communities and organisations work or act together in order to achieve a common objective.

Effective relief coordination is vital to ensure that disaster affected communities are supported and receive timely and appropriate information and relief assistance. There are many activities that may be needed in a disaster or emergency and all should be taken into consideration when planning for disaster management.

Examples of planned activities:

Figure 1: Planned activities and support for disaster relief



Source: Victorian Government Dept. Health and Resources. (2013) ⁷

Diabetes overview

What is diabetes?

Diabetes is a chronic condition where the body is not able to produce or effectively use insulin. Insulin is a hormone that is essential for the conversion of glucose (sugar) from food into energy to assist the body to function.

When people with diabetes eat foods containing glucose such as breads/cereals, fruit/starchy vegetables, legumes, milk, yoghurt and sweets, the glucose remains in the bloodstream, as it cannot be converted into energy. This explains why blood glucose levels are higher in people with diabetes if left unmanaged.

There are three main types of diabetes: type 1 diabetes, type 2 diabetes and gestational diabetes.

Type 1 diabetes

Type 1 diabetes is a complex, chronic auto-immune disease.

Type 1 diabetes:

- » is life-threatening
- » has no exact known cause
- » cannot be prevented
- » has no cure
- » is one of the most common chronic diseases in children.

Although it usually occurs for the first time in people aged under 30 years, it can occur at any age. More than 60% of people with type 1 diabetes are over the age of 40 years.

Type 1 diabetes affects approximately 10% of all people living with diabetes.

The body attacks the healthy insulin-producing cells that sit within our pancreas and destroy them. This therefore leaves the body unable to produce its own insulin (an essential hormone that is vital for glucose/sugar from the food we eat to pass from the bloodstream into our cells to provide energy) leading to circumstances that can and do lead to death, unless appropriate medical intervention occurs.

Those living with type 1 diabetes require 'artificial' insulin, given the body can no longer produce it. Type 1 diabetes treatment involves a lifelong process of insulin injections every day or the use of an insulin pump attached to the body.⁹

Insulin does not provide a cure, nor make the complex around-the-clock management of diabetes disappear.

Type 2 diabetes

The most common form of diabetes is type 2 diabetes.

It usually affects older adults, but is now becoming more common in younger people including children. Type 2 diabetes affects approximately 85% of all people living with diabetes.

In type 2 diabetes, the pancreas produces some insulin but not the amounts needed by the body to allow effective functioning.

There is a strong genetic predisposition, and the risk of acquiring type 2 diabetes is increased when associated with certain lifestyle factors, such as unhealthy eating and lack of exercise.

Treatment of type 2 diabetes includes diet and exercise management, and in some cases, tablets will be required as well. Eventually most individuals will also require insulin.¹⁰

Gestational diabetes

Gestational diabetes is a form of diabetes that occurs during pregnancy. Between 3-8% of pregnant women will develop gestational diabetes.

In most women, the onset of gestational diabetes is around the 24th to 28th week of pregnancy, however for some it may be earlier.¹¹ In most cases, gestational diabetes will resolve after birth. Gestational diabetes may result in problems during pregnancy, delivery and after birth. The risks of these problems is reduced by effective management of the condition.

Gestational diabetes increases the risk of developing type 2 diabetes later in life for both the mother and child.

Diabetes management & natural disasters

What are disasters?

Disasters are considered by Emergency Management Australia to be “a serious disruption to community life which threatens or causes death or injury in that community as well as damage to property which is beyond the day-to-day capacity of authorities. It requires special mobilisation and organisation of resources other than those normally available to those authorities.”¹²

In Australia, natural disasters occur regularly from:

- » bushfire
- » flood
- » cyclone
- » storm
- » heatwave
- » drought.¹³

People with diabetes are at increased risk during disasters

Diabetes management can deteriorate both during and after a disaster. Research shows people with diabetes experience an increase in blood glucose levels following a disaster event. People who require insulin seem to experience even greater deterioration in their diabetes management than those who do not require insulin. Some of the effects can last months.^{14,15}

Increased risk of developing diabetes after a disaster

Evidence from research indicates that disasters could contribute to developing diabetes. Post-traumatic stress disorder (PTSD) is associated with an increased risk of developing diabetes after a disaster.¹⁶ It may be that increased levels of stress result in excess secretion of cortisol, leading to an increase in blood glucose levels. PTSD is also associated with unhealthy behaviours such as poor diet and physical inactivity – risk factors for diabetes.¹⁶ There can also be increased risk of developing heart disease, high blood pressure and stroke.¹⁷⁻¹⁹

Importance of continuity of diabetes care during & after disasters

There is a need for continuity of management of diabetes. In particular, by making sure that routine diabetes medication and monitoring are not disrupted.^{20,21}

Disruptions may include, but are not limited to the following, all of which affect diabetes management:

- » a sudden change in diet
- » a reduction or increase in exercise
- » poor availability of glucose monitoring equipment
- » change in routine
- » stress/anxiety/fear
- » alteration in priorities.

Preparedness for disasters

Experience from overseas suggests that preparedness is the key to recovery.^{17,18} People with diabetes and other chronic conditions need to be prepared for events that may result in a need for evacuation for an extended period.

Risk reduction concepts

Examples of risk reduction concepts include:

- » educating and encouraging people to be effective self-managers of their condition
- » ensuring good communication (phones, radios, television, media SMS, hard print)
- » activating disaster plans (coordinated approach)
- » community awareness of local emergency plans
- » people in disaster prone areas should have individual safety plans which should be reviewed yearly
- » knowing who to contact for help (GP, nurse/doctor on call)²²
- » effective partnerships, coordination and communication between governments, non-government organisations (NGOs) and business
- » register of certain chronic conditions
- » people with chronic conditions should have an updated plan or health record, for example, My Health Record or **My diabetes plan for natural disasters and emergencies**.

Medications

Although medications (pills, oral liquids, drugs for injection, inhalers and skin medications) are generally easily available from Australian pharmacies, pharmacies may be closed and hospitals inaccessible during disasters and emergencies. There can also be disruptions to medication delivery and supply.

All medications are important, but some, including insulin, are lifesaving and may result in extremely dangerous or fatal outcomes if not available. During an emergency, the key medication issues include the availability and appropriate storage/handling of medicines and medical equipment.



Caution: Medications and unsafe water exposure

- Medications that are exposed to flood or unsafe water may become contaminated. This contamination may lead to conditions that can cause serious health effects.
- Even medications in their original containers should be discarded if they have been exposed to flood or contaminated water.
- For lifesaving medications, if the container is contaminated but the contents appear unaffected, that is pills remain dry for example, they may be used until a replacement is obtained. If pills are wet however, they are potentially contaminated and **should be discarded**.



Caution: Additional supplies of medications

- If people are not able to return home for a long period of time, they may request an **extended-day supply** of their medication.
- This requires a doctor to write “**Regulation 24**” on the PBS prescription.
- Regulation 24 means that all the repeat prescriptions are supplied at the **same time**.

Insulin

What is insulin?

Insulin is an essential-for-life substance produced by the pancreas, a gland behind the stomach.

Insulin enables glucose (sugar) from the bloodstream to enter the body's cells and be used for energy. Insulin also stops the body from breaking down other tissues such as fat and muscle.

The body normally produces a very low level of insulin overnight and between meals. The body produces a large boost when food is eaten, particularly carbohydrate rich food.

Who needs to take insulin?

All people with type 1 diabetes need insulin around the clock in order to stay alive, either administered by multiple daily injections or through an insulin pump attached to the body under the skin.

If the person uses an insulin pump, the cannula that sits beneath the skin requires changing every few days, in addition to the actual site on the body and refilling of the insulin vial.

Many people with type 2 diabetes also need to take one or more doses of insulin a day to manage their blood glucose levels. They may use insulin alone, or in combination with other oral or injectable diabetes medications.

Some women with pregnancy related diabetes (gestational diabetes) also need tablets (metformin) and/or insulin to manage blood glucose levels.



Caution: Insulin requirements

- **Glycaemia** is the medical term referring to the level of glucose in the blood.
- Reduced or missed doses of insulin, stress, other illness or injury can lead to dangerously high blood glucose levels known as **hyperglycaemia**.
- If left untreated, hyperglycaemia can lead to a potentially life-threatening condition known as **diabetic ketoacidosis or DKA**.
- Too much insulin or insufficient food intake can lead to dangerously low blood glucose levels known as **hypoglycaemia or hypos**.
- If left untreated, **hypoglycaemia** can lead to loss of consciousness, coma and/or death.

There are many different types of insulin

Insulin is usually of the same strength (100 IU/ml) across products but comes in very different preparations that differ by time of onset, peak strength and duration.

In Australia, the most prescribed insulins are currently:

- » rapid acting insulins which last 2-4 hours
- » flat profile longer acting insulins which either have a 12-hour or 24-hour duration OR
- » intermediate (time) acting insulins
- » in addition, there are many pre-mixes of both the rapid and intermediate insulins.

Many people with type 2 diabetes also use a non-insulin form of injection that stimulates the pancreas to produce insulin).

For more information on insulin refer to the **NDSS Starting insulin** booklet.



Caution: Insulin switching

- If a person's usual type of insulin is **not** available, it is **vital** to seek medical advice before substituting with a different type of insulin.
- It is also vital to understand there is **no "standard"** dose of insulin. A complex number of factors and calculations make up each individual's **unique requirements**. Such factors include insulin sensitivity, carbohydrate to insulin ratios and patterns of exertion/activity over any given 24-hour period.

Exposure to excessive heat

The effectiveness of drugs can be destroyed by high temperatures, such as those associated with fires or heatwaves.

However, if medication in its container looks normal to the user, the medication can be used until a replacement is available.

Medications should be replaced as soon as possible if there is a possibility that they have been exposed to excessive heat.

Insulin & refrigeration

Some drugs, including insulin, require refrigeration to be at their optimum effectiveness. As insulin is temperature sensitive, it loses potency if not refrigerated and so has a shorter shelf life than the labelled expiration date.

Insulin products contained in vials or cartridges supplied by the manufacturers (opened or unopened) may be left unrefrigerated at a temperature between 15°C and 25°C for up to 28 days and continue to work.

However, in emergencies, insulin that has been opened for more than 28 days and exposed to temperatures above 25°C may need to be used if no further supplies are available but they should be replaced as soon as possible.



Caution: Keeping insulin cold

- Insulin that has been frozen should not be used.
- Insulin should not be stored too close to ice.
- If storing insulin with icepacks to keep insulin cold and protect it from freezing, first wrap icepacks in newspaper or cloth.

Blood glucose monitoring

An essential task of diabetes care during and after a natural disaster or emergency, involves regular monitoring of blood glucose levels.

Blood glucose levels are measured in millimoles per litre of blood (mmol/L).

Target ranges may differ depending on age, duration of diabetes, the type of medication being taken and if there are any other medical problems.

Normal blood glucose levels are between 4.0 – 7.8 mmol/L

Monitoring is done using equipment such as finger-stick devices (lancets) and blood glucose meters.

Usually the person with diabetes will monitor their own blood glucose levels, however it may be necessary for a carer to assist in an emergency situation.

When in a group setting (e.g. a temporary shelter) during a disaster, strict observance to infection control is required to prevent transmission of blood borne conditions such as hepatitis B, hepatitis C, and HIV. This includes access to medical supplies such as sharps safety bins, gloves, alcohol hand gel, wipes and clean areas.

Diabetes care procedures & techniques for carers

- » Medications such as insulin should be prepared in a designated medication area. Insulin vials need to be labelled appropriately. This should include a person's full name, and the date the insulin was opened.
- » Never reuse needles. If available, use retractable needles when using insulin, or use retractable syringes/pen devices with retractable syringe.
- » Restrict use of finger stick blood sampling devices to individuals. Consider selecting single-use retractable lancets.
- » Dispose of used finger stick devices and lancets at the point-of-use in a sharps container. If a sharps container is not available, another empty container should be designated for the use of sharps disposal and marked accordingly.
- » Blood glucose meters should ideally be assigned only to an individual. If this is not possible, the device must be cleaned and disinfected with 1:10 dilution of household bleach and clean water.

Hand hygiene for carers

- » Wear gloves during finger stick blood glucose monitoring, administration of insulin, and during any other procedure that involves potential exposure to blood or body fluids.
- » Change gloves between individual contacts. Change gloves that have touched potentially blood-contaminated objects or finger stick wounds before touching clean surfaces.
- » Remove and discard gloves in an appropriate manner after every procedure that involves potential exposure to blood or body fluids.
- » Perform hand hygiene (that is wash hands with soap and water or use of an alcohol hand gel) immediately after removal of gloves and before touching other medical supplies.

Hypoglycaemia

Hypoglycaemia (also known as hypo or low blood glucose level) is a condition that occurs when the blood glucose level has dropped below normal, usually below 4mmol/L, although this can vary.

It is important to treat hypo immediately to stop the blood glucose level from falling even lower and potentially becoming a life threatening situation.

Causes of hypoglycaemia

- » Delaying or missing a meal
- » Unplanned physical activity
- » Not eating enough carbohydrates
- » More strenuous exercise than usual
- » Drinking alcohol
- » Too much insulin or diabetes tablets

Common symptoms of hypos

- Weakness, trembling or shaking
- Irritability/aggression
- Light headedness/dizziness
- Lack of concentration/behaviour change
- Tearfulness/crying
- Numbness around the lips and fingers
- Sweating



Caution: If not treated ASAP the following can occur

- Loss of coordination
- Confusion
- Slurred speech
- Loss of consciousness
- Fitting/seizures



Caution: If person is unconscious, drowsy or unable to swallow

THIS IS AN EMERGENCY AND NO FOOD OR DRINK IS TO BE GIVEN BY MOUTH!

- Place the person on their side making sure their airway is clear.
- Give an injection of glucagon if available and you are trained to give it.
- Phone for an ambulance (if possible) stating a 'diabetes emergency'.
- Wait with the person until an ambulance arrives.
- When they regain consciousness, the person will require carbohydrates to maintain their blood glucose level.

Glucagon kit

Glucagon is a hormone, which raises the blood glucose level and is injected in a similar way to insulin.

Glucagon is recommended to reverse **severe** hypoglycaemia (hypo) in people with diabetes.

If a person is able to treat their own hypo, they do not need glucagon, which is always administered by another person.

If a person is unable to eat or drink, such as due to impaired consciousness, a **glucagon** injection may be considered. This is always given by another person, who is trained to do so.

The resource, **My diabetes plan during natural disasters and emergencies** recommends that a person include a glucagon kit and hypoglycaemia kit packed with their medical supplies.

The risk of hypoglycaemia when driving can be a concern especially during a disaster or emergency. For information on [diabetes and driving](https://www.ndss.com.au) visit [ndss.com.au](https://www.ndss.com.au)



Hypo treatment checklist

If hypo is suspected, check blood glucose levels. If the blood glucose level is below 4mmol/L, then follow the hypo treatment checklist. If you can't check the blood glucose level and the person is showing some symptoms of hypo, then treat as hypo just in case.

- ☐ Provide individual with one of the following (or assist):
 - ☐ 6 or 7 jellybeans.
 - ☐ 3 teaspoons sugar or honey.
 - ☐ Half glass fruit juice.
 - ☐ Half can regular soft drink (not diet).
 - ☐ Glucose tablets equivalent to 15 grams of carbohydrates.
- ☐ Wait 10-15 minutes then retest blood glucose levels.
- ☐ If no rise in blood glucose levels, complete first step again.
- ☐ If next meal more than 20 minutes away, provide one long acting carbohydrate serve from the following:
 - ☐ One slice of bread.
 - ☐ One glass of milk or soymilk.
 - ☐ One piece of fruit.
 - ☐ 2-3 pieces of dried apricots, figs or other dried fruit.
 - ☐ One tub natural low fat yoghurt.

Hyperglycaemia

Hyperglycaemia means high blood glucose level. This can develop over many hours or days.

It is possible for the blood glucose level to be high without a person realising.

Persistently high blood glucose levels for more than 12-24 hours (above 15mmol/L) can result in hyperglycaemia.

Symptoms of hyperglycaemia

- » Feeling excessively thirsty
- » Frequently passing large volumes of urine
- » Feeling tired
- » Blurred vision
- » Infections (e.g. thrush, cystitis, wound infections)
- » Weight loss

Common causes of hyperglycaemia

- » Sickness
- » Infection
- » Stress
- » Too much carbohydrate food at once
- » Not enough insulin, non-insulin injections or diabetes tablets
- » Other tablets or medicines

Treatment

For type 1 diabetes

1. Short acting insulin doses should be increased. Extra doses of insulin may also be required.
2. Blood glucose levels should be tested frequently, as well as checking for ketones.
3. Extra water should be consumed or low calorie fluids to keep up with fluid lost by passing more urine.

Advice from a healthcare professional should be sought as soon as possible if:

- » vomiting stops a person from drinking and makes eating difficult
- » blood glucose levels remain high
- » moderate to large ketones are present.

In type 1 diabetes, high blood glucose levels can progress to a serious condition called ketoacidosis.

For type 2 diabetes

It is normal for blood glucose levels to go up and down throughout the day. An occasional high blood glucose level is not a problem. But if blood glucose levels remain high for a few days or if the person is sick, advice from a healthcare professional should be sought as soon as possible.

Ketone monitoring

What are ketones?

Ketones are a family of chemicals produced by the body when breaking down fatty tissue.

In people with diabetes, predominantly type 1 diabetes, ketones can develop rapidly, within hours, and increase to dangerously high levels. This can advance to a life-threatening condition called diabetic ketoacidosis (DKA), which requires urgent medical attention.

People with gestational diabetes or type 2 diabetes do not usually develop dangerously high levels of ketones. If in doubt, checking for ketones in the blood or urine will assist in management.

Why might ketones rise during a natural disaster or emergency?

- Physical and/or emotional **stress**.
- **Illness or injury**.
- Missed or reduced **doses** of insulin.
- **Concurrent illness** such as vomiting and/or diarrhoea.

Detecting ketones

- Some types of ketones can be smelt on another person's breath. If ketones are elevated it is described as smelling like **acetone or nail polish remover**.
- However, **not** all ketones smell and not all people are able to detect the ketone smell, even when present at high levels.
- The best way to detect and measure ketones is by **blood or urine checking** using single-use ketone strips (for blood or for urine), which have an expiry date on the bottle and box.
- Certain brands of **blood glucose meters** include a function for checking for ketones also, using specific ketone measuring strips.
- Blood ketone checking is **preferred** over urine checking when available as it better reflects the body's response to illness.

When should ketone levels be checked?

- » Ketone levels to be checked every 2-4 hours when blood glucose levels are more than 15 mmol/l, or when there is a concurrent illness or injury.
- » If blood glucose or ketone levels are high, checking blood ketones every hour may be appropriate to guide management.

What emergency medical assessment and treatment is needed?

Medical intervention and emergency hospitalisation may be required in the following scenarios:

- » Moderate or high urine ketone levels or blood ketone levels over 15 mmol/l.
- » Ketones are present and rising or not falling in response to insulin treatment.
- » The person is severely ill, vomiting, breathing rapidly, has abdominal pain, is severely dehydrated, is confused or has impaired consciousness.
- » The person and those around them are unable or unwilling to support their out of hospital management.

Mental health

Disasters affect individuals and communities in a range of ways and can cause major disruptions to people's lives, both emotionally and physically. Most communities and individuals draw on their strengths during disasters and are often very resilient, but the impact of disasters can be felt by communities and individuals over an extended time period.

The effects of a disaster can be widespread for individuals as it can mean the loss of family, friends, their home, their workplace, their school, business, community, their health and access to services. Those affected by disasters may report feelings of grief, fear and anxiety, anger, guilt, numbness or depression and some may not communicate their feelings at all. Disasters may also impact on people's belief systems as they may experience a sense of loss of control over their life and future.

There is evidence to suggest that those affected by disasters may also be at increased risk of developing increased substance use and post-traumatic stress disorder (PTSD).²⁵ The majority of people recover from disasters without long-term mental health impacts but may benefit from some basic and psychological support during and/or after a disaster.

It is not uncommon for people with chronic conditions (including diabetes) to also have conditions such as depression and anxiety.⁴⁶ This suggests that those living with diabetes may require some additional monitoring of their mental health during and after a natural disaster or emergency.

Who is more at risk of mental health issues from a disaster?

Individuals at greater risk include:

- » those with pre-existing mental or physical health conditions including diabetes
- » those who believe they or a close loved one might die
- » those who actually lose such a person
- » those who experience a severe injury from the event
- » those at socio-economic disadvantage
- » children
- » elderly
- » those who are socially isolated.

What are normal initial reactions to such extreme events?

- » Distress, denial and disbelief are all normal early stress reactions to disasters.
- » People may be shocked and stunned. Difficulty thinking clearly and trouble remembering things, especially in the initial hours and days following the disaster or emergency.
- » Trouble sleeping, ongoing alertness or hyper-awareness, frequent tearfulness, irritability, anger, numbness or withdrawal can all be normal reactions to a disaster.
- » There is no one correct way to react. Everyone is different. As time progresses these feelings should diminish as normal activities resume.

What are possible longer-term mental health conditions?

- » The majority of people recover and do not develop mental health conditions following a disaster or emergency. Psychological stress may contribute to the development of chronic mental and physical health effects.
- » Anxiety, depression and increased substance use/abuse, are some of the more common conditions that may develop, or worsen after a disaster or emergency. Post-traumatic stress disorder (PTSD) may also sometimes occur with research showing that such a diagnosis is associated with poorer diabetes control after a disaster.^{14-16,19}

What can help recovery?

- » Recovery can be facilitated by a return to normal routine. This is particularly important for children as it gives a sense of safety. Undertaking small achievable practical tasks can give a sense of effectiveness in a situation that feels out of control. These 'tasks' can be created to help keep someone who is distressed occupied, such as taking responsibility for looking after a pet.
- » Maintenance of good diabetes management with early medical review is important as medication requirements may change.^{20,21} Keeping physically fit, eating a healthy, regular diet and limiting alcohol intake, will help mental health recovery.

Assisting people to access support

Consider the following:

- » ensure that a quiet and private area is available
- » maintain a calm manner and allow sufficient time for people to talk
- » keep families together
- » be honest – avoid making promises and know that it is okay to say you do not know
- » be friendly and compassionate even if people are being difficult – if you feel threatened ask for assistance

- » be mindful and respectful of cultural considerations, ethnic or clan differences
- » respect the privacy of every individual
- » some people may be suspicious of your intentions to help.

Further support – personal services

- In an evacuation centre, refer people who need further support to agencies providing personal services.
- This may include Red Cross or other nominated agencies/community health services such as Lifeline or Beyond Blue.

When is extra help needed?

- » Any ongoing distress following a disaster should be reviewed by a healthcare professional.
- » Management of any mental health conditions should be concurrent with the physical conditions, as each affects the other.
- » General Practitioners are skilled at treating a wide range of medical conditions and where necessary can coordinate referrals as needed. This includes referrals to mental healthcare professionals such as a psychologist or psychiatrist or an endocrine specialist for diabetes review.
- » See Appendix 5 looking after yourself (volunteers and support people) for further information on how to care for your own mental health during a natural disaster or emergency.

Nutrition

People with medical conditions such as diabetes need to ensure they have an emergency kit prepared to assist before, during and after a natural disaster or emergency.

Part of the individual's preparation needs to focus on nutrition, and include carbohydrates. Within an evacuation centre the following should be considered:

- » healthy options should be available for people with diabetes. Some options that have a relatively long shelf life and do not require refrigeration for storage include canned fruit, savoury biscuits (crackers, crispbreads), cereal/muesli bars, popped corn and baked beans.
- » provide access to plenty of clean water.
- » provide healthy, low GI food options including multigrain breads, and fruit and vegetables.

Key messages

- Ensure people living with diabetes are aware of the need to have a disaster management kit including hypo management, carbohydrate containing foods and plenty of water.
- Blood glucose level monitoring needs to be maintained as increased physical activity (for example, cleaning up following a disaster) increases the risk of hypo.

Please refer to the section on hypoglycaemia for further information.

Physical activity

A natural disaster or emergency is likely to create a situation that requires higher-than-usual physical activity as well as erratic meal times that can cause fluctuations in a person's blood glucose levels. It is important that people with diabetes eat regular appropriate snacks (e.g. fruit, bread) to counteract the lowering of blood glucose levels caused by physical activity.

Excessive exercise when blood glucose is over 14 mmol/l can cause blood glucose levels to increase further. People with diabetes in disasters must be vigilant in monitoring their blood glucose levels regularly and treating them appropriately.

Dehydration can also aggravate managing diabetes, so it is essential that people with diabetes keep well hydrated at all times.

Care for those undertaking physical activity

Water

It is essential that people remain hydrated. They should also not allow themselves to get to the point where they feel thirsty. They need to be encouraged to drink regularly, and due to the extra physical demands should increase their fluid intake. They should also take regular short breaks from intense or prolonged activity.

Food

It is essential that people with diabetes eat small amounts often to counteract the energy used doing extraordinary exercise. A person with diabetes needs to consume regular carbohydrate foods or beverages. Blood glucose levels should be tested regularly. If the person with diabetes does not have access to regular carbohydrate food and water, they should be advised to not assist with the clean-up response.

They need to wait until they can access appropriate amounts of food and water whilst 'on the job'. They should also dress appropriately for the conditions and the environment where they work. This includes the use of hats, sunscreen, long-sleeved shirts, and sturdy shoes.

Monitoring

- The key to a person with diabetes remaining well and active in a disaster situation is the attention to their blood glucose levels.
- They need to monitor their blood glucose levels and respond immediately to any triggers or red flags to avoid hypo or hyperglycaemia in the first instance after a natural disaster.
- Generally, people with diabetes know a lot about their condition and can advise you as to what their requirements may be. Please refer to the chapter on blood glucose monitoring.

Warning signs

You must respond to anyone who complains of any of the following:

- » chest pain
- » abdominal pain
- » neck or arm pain
- » general chest discomfort
- » feels faint or generally unwell
- » excessive thirst
- » frequent urination.

If someone with diabetes says they are feeling the symptoms of low blood glucose or hypo, get them to stop what they are doing, sit down, check their own blood glucose level and treat their hypo. This is done with either glucose, jelly beans, or a sugary beverage. If no glucose meter is available it is recommended to provide something like jelly beans regardless.

If these actions and treatments are not possible or the symptoms persist call an ambulance immediately and seek medical advice as soon as possible.²⁶⁻²⁸

Refer to the section on hypoglycaemia for further information.

Diabetes & potential complications

Diabetes is a complex condition that can affect many parts of the body and the mind.

The potential complications of diabetes are the same for type 1 diabetes and type 2 diabetes and include:

- » Heart attacks and strokes are up to four times more likely in people with diabetes
- » Diabetic retinopathy and potential vision loss affects one in six people with diabetes
- » Kidney damage is three times more common in people with diabetes
- » Amputations are 15 times more common in people with diabetes.

Foot care

Feet are at risk when living with diabetes because diabetes can cause damage to the nerves in feet, impact on blood circulation and lead to infection. Having diabetes can increase the risk of foot ulcers and amputations.

Effective foot care is of particular importance for people with diabetes during natural disasters and emergencies. This is to avoid conditions such as 'trench foot' (also known as 'immersion foot').

What is trench foot?

Trench foot is a condition that occurs when the feet are wet for long periods. It is preventable and treatable.

Trench foot symptoms

Symptoms of trench foot include:

- » tingling and/or itching sensation
- » pain
- » swelling
- » cold and blotchy skin
- » numbness
- » prickly or heavy feeling in the foot.

The foot may be red, dry, and painful after it becomes warm. Blisters may form, followed by skin and tissue dying and falling off. In severe cases, untreated trench foot can involve the toes, heel, or entire foot.

How is trench foot prevented and treated?

When possible, air-dry and elevate the feet, and exchange wet shoes and socks for dry ones to help prevent the development of trench foot.

1. Treatment for trench foot is similar to the treatment for frostbite. Take the following steps:
2. Thoroughly clean and dry the feet.
3. Put on clean, dry socks daily.
4. Treat the affected part by applying warm packs or soaking in warm water (39°C to 43°C) for approximately 5 minutes.
5. When sleeping or resting, socks should not be worn.
6. Obtain medical assistance as soon as possible.

People with diabetes are more prone to foot wound infections. Feet should be checked at least once a day for possible infection or to monitor for worsening of symptoms.²⁹

Vision

People with diabetes have an increased risk of eye disease and damage to blood vessels. Due to this increased risk, a person with diabetes needs to pay particular attention to:

- » changes to routine
- » heightened risk of foreign bodies or irritations due to smoke and wind
- » dust
- » chemicals.

Vision related warning signs

These vision related warning signs indicate the need for medical assessment as soon as possible:

- » blurred vision or loss of vision
- » eye pain
- » redness of the eye
- » eye discharge
- » floaters (spiders or dots) in the person's vision.

If someone experiences any of these symptoms, a general practitioner, specialist or optometrist medical review needs to be organised as soon as possible.

Assessing and reporting a vision problem

To assist the healthcare professional to diagnose and treat the condition, you should encourage a person with diabetes to record the following details:

- » history of any prior eye problems or treatments
- » use of glasses or contact lenses
- » use of eye drops and when last taken
- » usual medications
- » vision and diabetes care team contacts.

Wound care

The risk for injury during and after a natural disaster or emergency is high. Wound care is of particular importance for people with diabetes, due to increased risk of infections and longer healing time.

In the case of a natural disaster, resources are limited, but by following these basic wound management steps, further medical problems can be prevented or minimised.

How to treat wounds

Steps to avoid infection should be taken for any wound, no matter how small. Even a minor wound can become infected.

- » Apply direct pressure to any bleeding wound. Tourniquets are rarely used since they can cause damage to the body.
- » Examine wounds for obvious contamination and foreign bodies.
- » Remove constricting rings or other jewellery from injured body part.
- » Thoroughly clean the wound with saline solution, or bottled water if saline is not available. Soap should not be used as it can irritate the injury.
- » If a minor wound, cover the wound with a sterile dressing or bandage and check daily for signs of infection.
- » If wound is major, is likely to be contaminated or have foreign bodies in it, pack wound with saline soaked gauze and a dry bulky dressing and obtain medical assistance as soon as possible.

The wound should be checked daily to check for infection, and a fresh dressing or bandage applied. Advice should be sought from a medical practitioner as soon as possible.

Other considerations

- » Check for other injuries in patients with any wounds.
- » Ensure referral to a medical practitioner, follow-ups, and re-evaluations whenever possible.
- » Dirty water, soil, and sand can all cause infection. Wounds can become contaminated by very tiny amounts.
- » When a deep wound (also known as a puncture wound) occurs, bits of clothing and debris can be carried into the wound resulting in infection.



Caution: Contamination of wounds

- Contamination of wounds with water can lead to infections caused by waterborne organisms.



Caution: Tetanus

- Tetanus is a severe, often deadly, toxic condition. It is almost 100% preventable with vaccination.
- Any wound or rash has the potential to become infected and should be assessed by a medical practitioner as soon as possible.



Part 1: Summary checklist

- ☐ There are three main types of diabetes - type 1 diabetes, type 2 diabetes and gestational diabetes.
- ☐ Type 1 diabetes is life-threatening and requires insulin daily to stay alive. Insulin is administered via multiple daily injections or an insulin pump attached to the body beneath the skin.
- ☐ Hyperglycaemia (high blood glucose levels) and hypoglycaemia (also known as hypo or low blood glucose levels) are both potentially life-threatening situations and require vigilant monitoring and treatment.
- ☐ It is essential that people with diabetes monitor their blood glucose, using a blood glucose meter.
- ☐ If the person with diabetes is ill (e.g. vomiting) their ketones must be checked.
- ☐ In disaster and emergency situations, people with diabetes and their carers must understand how to manage ketones and hypoglycaemia, including how to recognise when glucagon is required.
- ☐ People with diabetes can have associated mental health conditions and combined with the normal reactions to disasters and emergencies, may require additional monitoring and/or referral to specialist agencies.
- ☐ People with diabetes are at greater risk of injury, especially relating to damage to vision and nerves, and slower healing times for infections. Therefore, these risks must be monitored and carefully managed.
- ☐ Wound care should be managed to best practice guidelines, where possible.



Part 2: Chronic conditions management in natural disasters or emergencies

Chronic conditions overview

This chapter has been developed for local councils, emergency services and the not-for-profit sector involved in disaster and emergency planning as well as those involved in the coordination and management of evacuation centres after a natural disaster or emergency.

What is a chronic condition?

The term chronic condition applies to a group of diseases that tend to be long lasting and have persistent effects. Chronic conditions have a range of potential impacts on a person's individual circumstances, including quality of life and broader social and economic effects.

For the purpose of these guidelines, we are referring to the five of the **most significant** non-communicable chronic diseases (NCD). These include:

1. Diabetes

Type 1 diabetes is life-threatening, has no exact known cause, cannot be prevented, has no cure and is one of the most common chronic diseases in children, although up to 50% of cases are now diagnosed in those over the age of 18. It is an auto-immune disease where the body has destroyed its own cells within the pancreas that would normally produce insulin, an essential hormone. Because the body can no longer produce it, those with type 1 diabetes require "artificial" insulin daily via multiple daily insulin injections for life, in order to stay alive or via the use of an insulin pump attached to the body under the skin.

Type 2 diabetes has a strong genetic component, and the risk of developing type 2 diabetes is increased when associated with lifestyle factors including high blood pressure, high cholesterol & weight/obesity. In type 2 diabetes there is insulin resistance and the pancreas produces inadequate insulin for the body's increased needs. It is often managed by diet, exercise and weight loss and is often responsive to preventative measures. However, as time goes by, most people will need medication (including tablets or

non-insulin injections such as Byetta or Victoza) and in some cases may require some additional injectable insulin, in combination. Factors such as genetics, certain cancers & other metabolic disorders are also being linked to the onset of the disease.

2. Cancer

Cancer is the uncontrolled growth of cells, which can invade and spread to distant sites of the body. Cancer can have severe health consequences and is a leading cause of death. Lung, prostate, colorectal, stomach, and liver cancer are the most common types of cancer in men, while breast, colorectal, lung, uterine, cervix and stomach cancer are the most common among women.

3. Chronic respiratory disease

Chronic respiratory diseases (CRDs) are diseases of the airways and other structures of the lung. Some of the most common conditions are chronic obstructive pulmonary disease (COPD), asthma, occupational lung diseases and pulmonary hypertension. CRDs are not curable, however various forms of treatment that help dilate major air passages and improve shortness of breath can help manage symptoms and increase the quality of life for people with the disease.

4. Cardiovascular disease

Cardiovascular diseases are a group of disorders of the heart and blood vessels and include coronary heart disease, cerebrovascular disease (blood vessels supplying the brain), peripheral arterial disease (blood vessels supplying arms and legs), rheumatic heart disease, congenital heart disease (existing at birth), deep vein thrombosis and pulmonary embolism (blood clots in the leg veins, which can move to heart and lungs).

5. Kidney (renal) disease

Kidney (renal) disease is a general term for any damage that reduces the functioning of the kidney. Kidney disease is also known as renal disease. Because the kidney has many functions, there are

many types of kidney disease. The most common cause of chronic kidney disease is diabetes followed by high or unmanaged blood pressure known as hypertension. Chronic kidney disease can lead to end-stage renal disease (ESRD), in which there is almost total failure of the kidneys.

Models of chronic disease management

More than two decades ago, in response to the increasing burden of disease and the then apparent disparity between the approaches to the management of chronic disease, the Chronic Care Model (CCM) (Figure 2) was developed by the MacColl Institute for Health Innovation led by Edward Wagner.

This model of care provides a structure for practice change and includes:

- » health care organisation (in primary and acute sector)
- » community resources
- » self-management support
- » delivery of system design

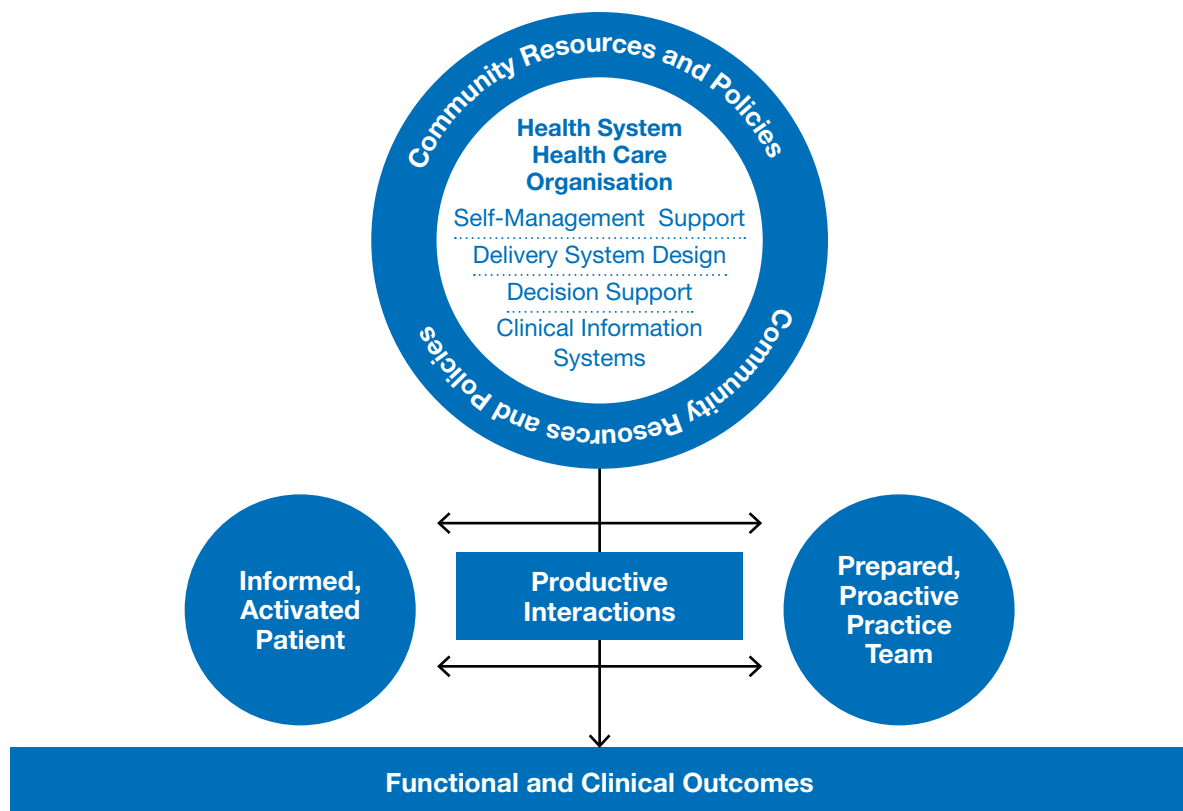
- » decision support
- » clinical information systems
- » patient safety (in health system)
- » cultural competency (in delivery system design)
- » care coordination (in health system and clinical information systems)
- » community policies (in community resources and policies)
- » case management (in delivery system design).

The model promotes:

- » emphasising the patient's central role in managing their health
- » use of effective self-management support strategies that include assessment, goal-setting, action planning, problem-solving and follow-up
- » organised internal and community resources to provide ongoing self-management support to patients.

The model can be applied to a variety of chronic conditions, health care settings and target populations. The bottom line is healthier patients, more satisfied providers, and overall cost savings.

Figure 2: Chronic care model



Source: Source: Coleman K et al. (2009) ³¹

Empowering and preparing patients to manage their health and health care

All patients with chronic conditions make decisions and engage in behaviours that affect their health (self-management). Disease management and outcomes depend to a significant degree on the effectiveness of self-management.

Effective self-management support means more than telling patients what to do. It means acknowledging the patient's central role in their care, fostering a sense of responsibility for their own health. It includes the use of proven programmes that provide basic information, emotional support, and strategies for living with chronic illness. Using a collaborative approach, health providers and patients work together to define problems, set priorities, establish goals, create treatment plans and solve problems along the way. People with a chronic condition who are using this self-management approach will generally be well organised in a disaster situation.

Almost half of all people with a chronic disease have multiple conditions. As a result, many managed care and integrated delivery systems have taken a great interest in assisting people in managing concurrent chronic diseases such as diabetes, heart disease, depression, asthma and others.³²⁻³⁴

Chronic diseases can be better managed when the following are avoided:

- » rushed practitioners not following established practice guidelines
- » lack of care coordination
- » lack of active follow-up to ensure the best outcomes
- » patients inadequately educated to manage their illnesses.

When any of the areas of the model become

compromised, for example in a disaster or emergency, the person with a chronic disease may not manage their condition as well as usual due to loss of their usual self-management support.

The provision of self-management support is essential to helping people with chronic diseases to successfully manage their condition in the event of a natural disaster or emergency.

Key messages

- Key non-communicable chronic diseases (NCDs) include diabetes, cardiovascular disease, cancer, chronic respiratory diseases and kidney disease.
- People whose health is compromised by NCDs are more vulnerable to the stresses and disruptions of disaster.
- Risk reduction of NCDs requires multi-sector action to promote healthy behaviours.
- NCDs are managed by a range of health services that address prevention, treatment, rehabilitation and palliative care.
- Health infrastructure with resilience to disasters is necessary to ensure continuity of care for people with NCDs in emergencies. Specific measures may include protection of essential equipment and stockpiling of essential medicines.
- A significant number of deaths after a disaster are as a result of inadequate health care services to cater for pre-existing conditions and illnesses.

Considerations for chronic conditions

Natural disasters, emergencies and the risk to people with chronic conditions

An increasing challenge for health systems is maintaining treatment and care for people with chronic conditions during and after a disaster or emergency.

A disaster often results in reduced access to medications, services, housing, safe water, and nutritious food, as well as the power required to run essential life sustaining equipment.

The following information is provided to help you care for people who have a chronic condition in a natural disaster or emergency.

Issues for chronic conditions that may occur during and after a disaster or emergency

Chronic Condition	Issues impacting Condition in disaster or emergency	Potential Outcomes
Diabetes	Serious impact on blood glucose levels due to: <ul style="list-style-type: none"> • Incorrect, damaged or no availability of insulin. • Physical and mental stress. • Physical activity. • Emotional responses – stress, fear, anxiety. • Hormonal responses – adrenaline, cortisol. • Inaccessibility to appropriate food & water supplies. 	<ul style="list-style-type: none"> • Hypoglycaemia (hypos). • Hyperglycaemia (in some cases DKA). • Unconsciousness. • Coma. • Death.
Cancer	Serious risk of contracting communicable disease due to compromised immunity: <ul style="list-style-type: none"> • Poor sanitation. • Unsafe drinking water. • Evacuation to a population dense setting. • Spoiled food. 	<ul style="list-style-type: none"> • Infection.
Cardiovascular disease	Serious risk of severe worsening or complications of condition due to: <ul style="list-style-type: none"> • Limited access to medication. • Disruption to health care services. • Physical workload associated with clean-up and reconstruction. 	<ul style="list-style-type: none"> • Increased blood pressure. • Unstable angina. • Palpitations (arrhythmia). • Heart attack.
Chronic respiratory disease	Serious risk of sudden worsening of condition due to: <ul style="list-style-type: none"> • Disruption to equipment (e.g. oxygen & nebulisers) and medications. • Overcrowding in shelters or temporary accommodation which increases exposure to airborne diseases and allergens. • Poor sanitation which can increase exposure to airborne mould spores. • Air pollution can also be a major concern, as can exposed asbestos if considerable damage to buildings. 	<ul style="list-style-type: none"> • Exacerbations of condition. • Becoming oxygen dependent. • Pulmonary embolism (a blockage of the lungs main artery). • Pneumothorax (the presence of air or gas in the cavity between the lungs and the chest wall, resulting in a collapse of the lung). • Increased risk of death within 90 days after a natural disaster.
Kidney (renal) disease	Serious risk of condition worsening due to: <ul style="list-style-type: none"> • Damage to equipment required to manage condition. • Lost medications. • Reduction in health care services. • Compromised water quality. • Poor sanitation. 	<ul style="list-style-type: none"> • If dialysis interrupted/discontinued for more than 3 days – life threatening. • Essential for transplant recipients (kidney or other organs) to continue anti-rejection medication.

What are the risks associated with an evacuation?

Often people with chronic conditions are evacuated without sufficient supplies of medication (often life-saving) and without their medical prescriptions. It is also common for people evacuated to lose access to the ongoing health care they require.

This, combined with the stress of a natural disaster or emergency can significantly increase the risk of worsening any pre-existing disease.

What do you need to consider?

There needs to be a focus on how to maintain treatment and care options before, during and after a natural disaster or emergency.

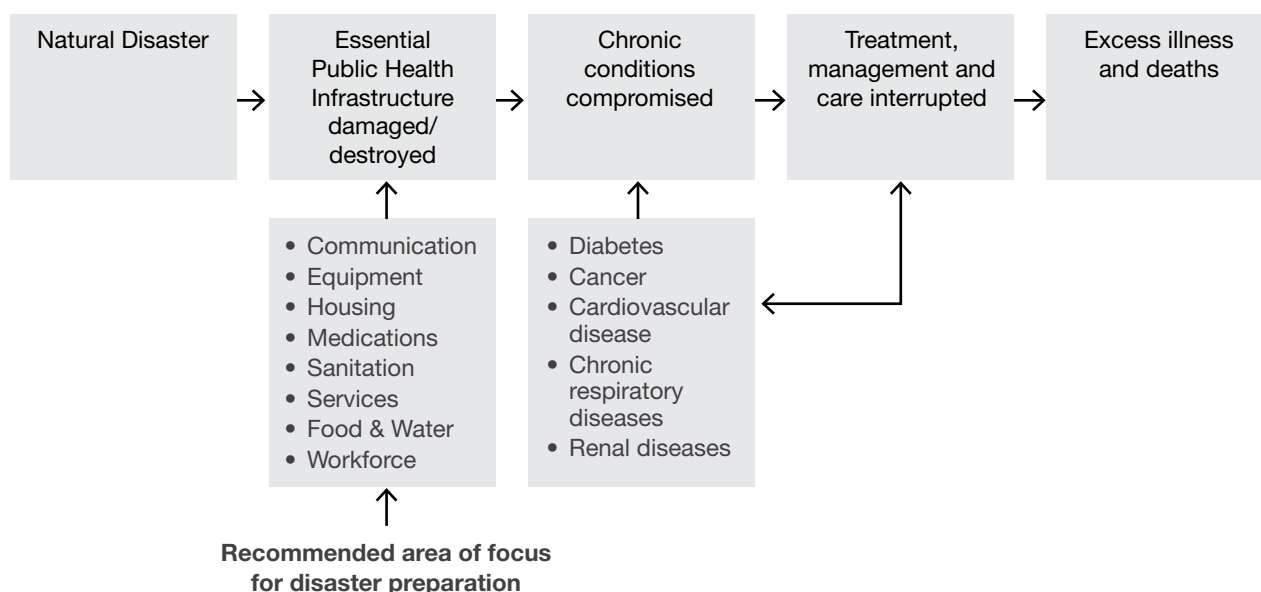
It is recommended that the below framework on the impact on people with a non-communicable disease (Figure 3) is used as a platform to achieve this outcome.

This should include:

- » ensuring effective communication about common chronic conditions with the people affected by disasters, emergency services, clinicians and healthcare providers
- » equipment to help people with common chronic conditions to manage their condition
- » appropriate housing/shelter
- » access to essential medications
- » good sanitation
- » medical and pharmaceutical services
- » access to clean water
- » communication about how to access health care and support for their condition.

These elements, when integrated, provide the basis for mitigating the impact of disasters and emergencies on people with chronic conditions.

Figure 3: Impact on people with a non-communicable chronic disease (NCD)



Source: Ryan et al (2015) ³⁵

1. Communication

- » The treatment and care needs of people with a chronic condition need to be well understood and communicated. This is particularly important for those undergoing cancer treatments, those with underlying cardiovascular and respiratory diseases, type 1 diabetes (in particular as daily insulin is essential) and those with kidney disease.
- » Coordinated communication that is both consistent and accurate should be made a priority when assessing and managing the immediate health needs of high-risk individuals with chronic conditions. Mismanagement, missed treatment and medications (some life-saving) and the associated risks and impact on chronic conditions must be mitigated. This can be achieved by providing education, fact sheets and guidance to people, volunteers, clinicians and healthcare providers in disaster-prone areas.

2. Equipment

- » It is important to have contingencies in place to maintain access to the equipment required for treating and managing chronic conditions. For example, back-up refrigeration for insulin, oxygen cylinders and multiple options for accessing dialysis treatment.
- » Contingencies should include ensuring the provision of treatment and care for up to two weeks after a natural disaster or emergency.

3. Housing

- » Suitable and safe accommodation needs to be provided to people with chronic conditions during a disaster or emergency situation. This could be in a safe location that provides access to basic treatment and care (e.g. a health centre).
- » After a disaster or emergency, people with chronic conditions need to be accommodated in a location that ensures easy access to treatment and care.

4. Medications

- » People with chronic conditions need to understand their medication requirements and the risks associated with a natural disaster or emergency.
- » It is recommended that people with chronic conditions be provided with sufficient medication supplies and prescriptions (including repeat prescriptions) that can last for at least two weeks after a disaster or emergency. All people on medications should have a current list of their medications with them in natural disasters and emergencies.

5. Sanitation

- » It is important to ensure good sanitation standards are in place, for example, robust infection control, cleaning standards and waste management.
- » People with chronic conditions are often immunocompromised and are therefore more susceptible to infection and contracting communicable diseases, which can further exacerbate pre-existing conditions.

6. Services

- » There are a range of services that help support people with chronic conditions, for example, hospital care, outpatient services and pharmacies. Ensuring access to services needs to be considered, as well as transport options including routes and the capacity of these services.
- » Contingencies need to be in place to ensure treatment and care services are easily accessible and maintained during and after a natural disaster or emergency.

7. Food and water

- » Access to appropriate food and safe, clean water is vital for maintaining treatment and care. Nutritious food options are important, particularly for people with diabetes in addition to quick acting glucose options required to treat dangerously low blood glucose levels known as hypoglycaemia (hypos).
- » Particular attention also needs to be paid to the dietary requirements of those with kidney disease. People on dialysis need a special diet of low-protein foods, with limited salt, potassium, phosphorous and other electrolytes to limit the buildup of waste products in the body.^{36,37}
- » Access to safe, clean water is also important. This is vital for dialysis treatment.

8. Workforce

- » There needs to be an adequate workforce in place to support people with chronic conditions during and after a natural disaster or emergency, for example, doctors, nurses, carers and pharmacists.
- » Any disaster planning for people with chronic conditions must consider strategies to ensure access to this workforce is communicated to the wider community.



Part 2: Summary checklist

- ☐ Thorough and comprehensive disaster planning is essential to ensure treatment & care for those with chronic conditions can continue safely & effectively.
- ☐ A significant number of deaths after a disaster or emergency are a result of inadequate health care services to cater for pre-existing diseases and illnesses.
- ☐ Top five most significant non-communicable chronic diseases (NCDs) include diabetes, cancer, chronic respiratory diseases, cardiovascular disease and kidney disease.
- ☐ NCDs are managed by a range of health services that may include preventive measures, treatment, rehabilitation and/or palliative care.
- ☐ The chronic care model (CCM) was developed to organise resources, self-management support strategies and promote patients' central role in managing chronic disease.
- ☐ Health infrastructure with resilience to natural disasters and emergencies is necessary to ensure continuity of care for people with NCDs. Specific measures may include protection of essential equipment and stockpiling of essential medicines.



Part 3: Key messages for people with diabetes

Key messages for people with diabetes

This chapter has been developed for people with diabetes, or those who are discussing planning requirements with those with diabetes in natural disasters or emergencies.

A number of resources have been developed for people with diabetes on the importance of pre-planning to ensure they are able to self-manage their diabetes before, during and after a natural disaster or emergency.

In developing these resources and this guide, there was extensive consultation with healthcare professionals, credentialled diabetes educators (CDEs), emergency services and people with diabetes.

These resources are available at ndss.com.au

Preparing for natural disasters or emergencies

Natural disasters or emergencies can have a significant impact on blood glucose levels. People with diabetes need to plan how they will keep managing their condition during a possible emergency.

Blood glucose levels can become more erratic and harder to manage during an emergency because:

- » it may be more difficult to get medication and medical treatment
- » it may be more difficult to access food and clean water
- » stress levels are increased
- » physical activity may increase or decrease compared to usual.

Emergency situations can last days or weeks after the event, so it is important that people with diabetes are prepared so they can self-manage their diabetes for at least 14 days.

When those that are physically able self-manage their diabetes, it allows medical staff to concentrate on those that need immediate medical attention.

**Note: Family and friends should know how to use an emergency glucagon pen

Particular attention should be paid to:

- » vulnerable persons - people who are isolated, older people, people with a disability and those in care
- » those who speak English as a second language.

Diabetes emergency kit

People living with diabetes should pack a diabetes emergency kit that contains:

- » copy of photo ID
- » a list of medical and surgical history
- » a letter from the diabetes healthcare provider outlining a person's medication schedule
- » a copy of a person's sick day management plan
- » a copy of a completed **My diabetes plan in natural disasters and emergencies** (see the plan in Appendix 2).

General medical supplies should include:

- » A 14 day supply of prescription medication.
- » Regularly used non-prescription drugs such as paracetamol, aspirin, etc.
- » A 3 day supply of bottled water per person.
- » A cooler bag with 4 refreezable cool packs or FRIO™ packs.

Diabetes-specific medical supplies may include:

- » A 14 day supply of insulin and injections if on insulin therapy.
- » Blood glucose checking supplies, blood glucose monitor and extra batteries, lancets and lancet device.
- » If applicable, continuous glucose monitoring (CGM)/Flash glucose monitoring (Flash GM) supplies
- » Empty sharps container.
- » Urine or ketone checking strips.
- » Hypoglycaemia kit containing jelly beans, glucose tablets, cans of soft drink, glucagon kit**, a supply of non-perishable foods (e.g. peanut butter, crackers, meal replacement shakes or bars).
- » Cotton balls and tissues.
- » A pen and notebook to record blood glucose levels.

Additional items for those on insulin pump therapy

- » Insulin pump settings and passwords.
- » Insulin pump consumables including quick sets and reservoirs.
- » A 14 day supply of insulin injections - in case of damage to the pump.
- » Spare batteries for the insulin pump.

During natural disasters or emergencies

- » People with diabetes should keep their emergency kit and plan with them, especially if there is pre-warning of a possible natural disaster or emergency occurring.
- » Blood glucose levels should be tested as normal and adjusted accordingly, regardless of when you last ate.
- » Different amounts of insulin and other medication may be required during a natural disaster or emergency because of higher levels of stress and likely change in level of physical activity.
- » Any alteration to medication should be done in consultation with a healthcare professional.
- » Once opened, insulin vials can be kept at room temperature (15–25 degrees) for up to 28 days.
Insulin must not be left in direct sunlight.
- » In an emergency, insulin that has been stored above 30 degrees may need to be used. **This insulin should be discarded as soon as properly stored insulin becomes available again.**
- » Insulin should be kept as cool as possible. If ice is used, do not allow the insulin to freeze. **Frozen insulin should not be used.**
- » Feet should be kept dry. Shoes should be worn and feet checked often for cuts, bruises, blisters or infected toenails.
- » Protective clothing should be worn.

After a natural disaster or emergency

- » Medication may not be available immediately after a natural disaster or emergency.
- » It may not be possible to keep insulin refrigerated immediately after a natural disaster or emergency. Insulin can be kept at room temperature (15–25 degrees) for up to 28 days.

- » There may be a long waiting time for medical attention as people with acute injuries are likely to be treated first.
- » A check-up with the person's GP or CDE should be done as soon as possible after a natural disaster or emergency.
- » Any cuts or scratches that may not be healing, particularly on the person's feet should be discussed with a healthcare professional as soon as possible.
- » Close monitoring of a person's diabetes should continue.

Special considerations:

- If water is suspected to be contaminated, or if the authorities recommend it, water should be treated before drinking to avoid the risk of gastric infections. Practical information regarding treating water can be obtained from local health authorities.
- Hands should be washed to reduce the risk of infection, with soap and clean water or disinfectant (e.g. alcohol wipes or hand sanitiser) before handling food and after touching any surfaces or objects that could possibly lead to infection.
- Protective clothing should be worn during the 'clean up' phase of a natural disaster or emergency. Gloves, durable and protective clothing and covered shoes should be worn to avoid injury. Note that some destroyed buildings may contain asbestos.
- Watch out for wildlife and other animals that may be displaced after a disaster. Watch out for potential dangers such as snakes or spiders. Contact your local council or RSPCA for advice.
- People should stay away from power sources if power lines have fallen, and contact the energy authorities.
- People should be careful around trees, as branches may have become loose and can fall without warning.



Part 3: Summary checklist

- ☐ Medicines, prescriptions and records should be organised in advance of any disaster or emergency warning, where possible.
- ☐ Any existing medical conditions or routinely taken medication should be discussed with a healthcare professional in advance and a copy of the person's current health summary should be included with the completed **My diabetes plan for natural disasters and emergencies**.
- ☐ All medical information and regular or as required medication should be kept in a safe place together with a packed emergency kit to ensure the most effective care can be provided during an emergency.
- ☐ A 14-day supply of medications, pump consumables, blood glucose monitoring equipment and insulin should be prepared, where possible.
- ☐ A copy of the resource, **My diabetes plan for natural disasters and emergencies** is provided in Appendix 2 and copies are available from ndss.com.au or call the NDSS Helpline **1800 637 700**.

Appendix 1:

Relationship to other documents

This Guide should be read in conjunction with the following:

For people with diabetes

- » **My diabetes plan for natural disasters and emergencies**

For those in emergency planning and/or management


- » Municipal emergency management plans (MEMPlans)
- » Regional emergency management plans including regional relief and recovery plans
- » State emergency response plan
- » State emergency relief and recovery plan

For health care professionals

- » The RACGP Managing emergencies and pandemics in general practice: A guide for preparation response and recovery was developed in 2013 as an educational resource for general practice staff during emergency preparation and response efforts. Alongside this, the RACGP's Emergency Response Planning Tool (ERPT) provides general practices with an online tool to develop and maintain their own practice's emergency response plan.
- » The Guidelines for preventive activities in general practice 8th edition (the red book) is a synthesis of evidence-based guidelines from Australian and international sources and provides recommendations for everyday use in general practice.
- » The Clinical guiding principles for sick day management of adults with type 1 diabetes or type 2 diabetes aims to assist health professionals in providing best practice self-management advice and support for adults with type 1 or type 2 diabetes when they experience an intercurrent illness. They may also be suitable for adults with other types of diabetes.

Appendix 2:

My diabetes plan for natural disasters and emergencies



NDSS
National Diabetes Services Scheme
An Australian Government initiative

NDSS Helpline 1800 637 700
ndss.com.au

Be aware. Prepare. Survive an emergency.

My diabetes plan for natural disasters and emergencies

This plan helps you manage your diabetes in an emergency

Stress in an emergency or a natural disaster can raise or lower blood glucose to dangerous levels. There may be no medication or food available, and no way of getting medical help.

A **diabetes emergency plan** helps you to self-manage your diabetes before, during and after an emergency. Planning ahead reduces the risk of diabetes-related infections and life-threatening situations.

This plan also lists important things to put in a **diabetes emergency kit** to help you survive.

Keep this plan and your emergency kit together in a safe place and keep them up to date.

Emergency kit checklist

Prepare a portable, waterproof, insulated diabetes emergency kit to take with you if you need to leave at short notice. It should contain the following:

Important documents

- ☐ A list of your medical and surgery history
- ☐ A letter from your diabetes healthcare provider on your diabetes medication regimen
- ☐ A copy of your sick day action plan
- ☐ A copy of this completed plan
- ☐ Copy of your photo ID

CHECK THE EXPIRY DATE of your supplies
UPDATE THIS PLAN at the start of every season.

General medical supplies

- ☐ A 14 day supply of your prescription medication
- ☐ Non-prescription drugs such as aspirin, paracetamol, antacid, vitamins, or any others that you buy and use from over the counter
- ☐ A 3 day supply of bottled water per person
- ☐ A cooler bag with 4 refreezable cool packs or FRIQ packs

Diabetes specific medical supplies (depending on your regular diabetes management)

- ☐ A 14 day supply of your insulin and syringes or insulin pens
- ☐ Blood glucose monitoring supplies, blood glucose monitor and extra batteries, lancets and lancet device
- ☐ If applicable, continuous glucose monitoring/flash glucose monitoring supplies
- ☐ Empty sharps container
- ☐ Urine or blood ketone checking strips
- ☐ Hypoglycaemia kit containing jelly beans, glucose tablets, cans of sweet soft drink, glucagon kit, a supply of non-perishable foods (For example peanut butter, crackers, meal replacement shakes or bars)
- ☐ Cotton balls and tissues
- ☐ Alcohol swabs
- ☐ A pen and a notebook to record blood glucose levels

Additional items for those on insulin pump therapy

- ☐ Insulin pump settings and passwords
- ☐ Insulin pump cannulas (sites) and reservoirs
- ☐ A 14 day supply of syringes or insulin pens - in case of damage to your pump

This plan is in addition to general emergency preparedness. Check your state and territory fire and emergency services for additional actions or items to consider in the case of an emergency.

Other important items for your emergency kit

<input type="checkbox"/> Torch and extra batteries	<input type="checkbox"/> Mobile phone charger and battery pack
<input type="checkbox"/> Lighter and candles	<input type="checkbox"/> Protective clothing
<input type="checkbox"/> Battery powered radio	<input type="checkbox"/> Heavy duty gloves
<input type="checkbox"/> First aid kit	<input type="checkbox"/> Protective eye wear
<input type="checkbox"/> Whistle	<input type="checkbox"/> Protective shoes
<input type="checkbox"/> Spare socks	

For more information about how to use this plan visit ndss.com.au



ADEA is a National Health Professional Body Agent for the NDSS.
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NDSS000002



The NDSS is administered by Diabetes Australia

Personal contacts

Name	
Relationship	
Telephone	
Name	
Relationship	
Telephone	
Name	
Relationship	
Telephone	

Diet and nutrition

List any special dietary requirements here.

Allergies and symptoms

related to your diabetes such as vitamins and herbs.

How much do you take each time?	Last updated

Assistance Line 13 14 44

SES 1800 637 700

Translating and Interpreting Service 132 500

13 14 50

ndss.com.au

42

The needs of people with diabetes and other chronic conditions in natural disasters and emergencies
A guide for emergency services, local councils and the not-for-profit sector

Appendix 3:

Glossary

Term	Explanation
Bolus Insulin	A bolus dose is insulin that is specifically taken at meal times to help manage blood glucose levels following a meal. Bolus insulin needs to act quickly and so short acting insulin or rapid acting insulin is generally used. It is often taken before meals but some people may be advised to take their insulin during or just after a meal if hypoglycaemia needs to be prevented.
Care coordination	Care coordination is where a patient's needs are coordinated with the assistance of a primary point of contact. Care coordination brings together health services, patient needs, and streams of information to facilitate high quality care and avoid duplication of health services.
Care plan	There are many types of care plans but in general it refers to a comprehensive version of the General Practitioner Management Plan. Care plans are developed by the patient and their significant others, carers and healthcare professionals. They define problems, goals, actions, timeframes and accountability for all involved, to prevent complications and deterioration of chronic conditions. [Battersby et al.2007]. ³⁸
Chronic care model (CCM)	The CCM provides a structure for organisation/practice change and encompasses six elements, or areas, for improvement. These include: <ul style="list-style-type: none"> • health care organisation • community resources • self-management support • delivery system design • decision support • clinical information systems.
Chronic condition and chronic disease	The term 'chronic condition' encompasses disability and disease conditions that people may 'live with' over extended periods (i.e. more than six months). Chronic disease is a subset of chronic conditions, and refers to a specific medical diagnosis. Chronic diseases may be more likely to have a progressively deteriorating path than other chronic conditions [World Health Organization 2002]. ³⁹
Chronic condition and self- management	Chronic condition and self-management is a process that includes a broad set of attitudes, behaviours and skills. It is directed towards managing the impact of the disease or condition on all aspects of living by the patient with a chronic condition. It includes, but is not limited to self-care and it may also encompass prevention. The following contribute to the process: <ul style="list-style-type: none"> • having a knowledge of the condition and its management • adopting a self-management care plan agreed and negotiated in partnerships with health professionals, significant others and/or carers and other supporters • actively sharing in decision making with healthcare professionals, significant others and/or carers and other supporters • managing the impact of the condition on physical, emotional, occupational and social functioning • adopting lifestyles that address risk factors and promote health by focusing on prevention and early intervention • having access to, and confidence in the ability to use support services [National Health Priority Action Council 2006].⁴⁰
Chronic condition self-management support	Chronic condition self-management support is what healthcare professionals, carers and the health system do to assist the patient to manage their condition [National Health Priority Action Council 2006]. ⁴⁰
Evidence-based care	The World Health Organization [2004, p25] ⁴¹ defines evidence-based care as 'The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individuals. This approach must balance the best external evidence with the desires of the individual and the clinical expertise of health care providers'.

Term	Explanation
Health literacy	The capacity to obtain, interpret and understand basic health information, services, and the competence to use such information and services to enhance health [United States Department of Health and Human Services 2000]. ⁴²
Hypoglycaemia (also known as hypo or low blood glucose level)	<p>Hypoglycaemia is a condition that occurs when the blood glucose level has dropped too low, usually below 4mmol/L, although this can vary. It is important to treat hypo quickly to stop the blood glucose level from falling even lower. It is also commonly referred to as hypo, low blood glucose or insulin reaction.</p> <p>Hypo is most common in people who inject insulin or are taking certain tablets to manage their diabetes. It is not a problem for those who manage their diabetes through a healthy eating plan alone.³¹</p>
Medication List	A medication list should entail a medication history and be an 'accurate recording of medications, comprising a list of all current medicines including all current prescription and non-prescription medicines, complementary healthcare products and medicines used intermittently; recent changes to the medication list; past history of adverse drug reaction including allergies and recreational drug use' [Royal Australian College of General Practitioners 2010, p.137]. ⁴³
Monitoring	Monitoring involves a process of continuous observing and checking [World Health Organization 2004]. In the context of chronic condition care, this is seen to involve the continuous observing and checking the clinical signs and symptoms of those conditions as well as progress with treatment and self-management. Monitoring will involve the patient as well as various healthcare professionals and carers or other supports involved in care.
Personal support worker	A personal support worker (PSW) is a health care worker that provides care to those who are not able to care for themselves. This includes seniors, individuals with physical disabilities and individuals with mental disabilities. ⁴⁴
Referrals, planned and reasons for referrals	A referral is when a patient is sent on, or directed to, another practitioner. It may be required when a worker at a given level cannot diagnose or treat certain individuals by themselves, or face health or social problems they cannot solve themselves.
Self-care	Self-care is a part of daily living. It is care taken by individuals towards their own health and wellbeing.
Self-management goals and strategies	<p>Self-management goals are goals that are set by the patient and are directed towards managing the impact of their disease on all aspects of living. They may relate to any or all of the principles of self-management:</p> <ul style="list-style-type: none"> • knowledge of the condition and its management • adopting a self-management care plan • actively sharing in decision making • monitoring and managing signs and symptoms of the condition • adopting a healthy lifestyle • access to, and confidence in the ability to use support services. <p>Self-management strategies are the methods or plans used to work towards and achieve those goals.</p>
UNISDR	United Nations Office for Disaster Risk Reduction. It is mandated by the United National General Assembly resolution (56/195), to serve as the focal point in the United Nations system for the coordination of disaster reduction and to ensure synergies among the disaster reduction activities of the United Nations system and regional organisations and activities in socio-economic and humanitarian fields.
Volunteer	A volunteer is a person who provides, or offers to provide, a service of their own free will, generally without payment [World Health Organization 2004, p.56]. ⁴¹
Well-being	Well-being can be characterised as a 'dynamic state of physical, mental and social wellness; a way of life which equips the individual to realise the full potential of his/her capabilities. A lifestyle which recognises the importance of nutrition, physical fitness, stress reduction, and self-responsibility [World Health Organization 2004, p.56]. ⁴¹

Appendix 4: Abbreviations and common acronyms

This list of common abbreviations and acronyms is to assist with understanding some medical terms that you may come across.

AM	Morning
BG	Blood glucose
CALD	Culturally and linguistically diverse
DKA	Diabetic ketoacidosis
FAQs	Frequently asked questions
GI	Gastrointestinal
GDM	Gestational diabetes
GP	General practitioner
HCP	Healthcare professional
Hypo	Hypoglycaemia
Hyper	Hyperglycaemia
IV	Intravenous therapy
Mane	Every morning
MEMPlans	Municipal emergency management plans
mmol/L	Millimoles/litre - unit for measuring glucose in blood
NDSS	National diabetes services scheme
NGO	Non-government organisations
Nocte	Every night
NPS	National prescribing service - Medicinewise
OHA	Oral hypoglycaemic agents
PBS	Pharmaceutical benefits scheme
PM	Afternoon
PRN	As required
PTSD	Post traumatic stress disorder
PCEHR	Personally controlled electronic health record
QID	Four times a day
SL	Sublingual (under the tongue)
Stat	Immediately
Subcutaneously	Situated or administered under the skin
TDS	Three times a day
T1	Type 1 diabetes
T2	Type 2 diabetes
WHO	World health organization

Appendix 5: Looking after yourself (volunteer and support people)

Emergency relief staff can be affected by trauma due to:

- » listening to people's stories and
- » observing the impact of the disaster.

Strategies to support yourself

- » Manage the amount of time you spend doing your role.
- » Take scheduled breaks – and avoid working back for long hours.
- » Eat healthy meals.
- » Use available support services – peer support, employee assistance programmes.
- » Develop posters with simple messages on ways staff can look after themselves.
- » Ask yourself:
 - how am I going?
 - what do I need?
- » Check on your family and friends in disaster-affected areas to ensure their safety: this will help to alleviate potential anxiety and concern for loved ones.

- » Accept appropriate assistance offered to allow yourself time away from work.
- » Monitor your own distress level.
- » Identify when you start to notice stress and attend to your physical needs as much as possible.
- » Maintain good general health with regular exercise, good nutrition and regular sleep habits.
- » Use your personal and family support network.
- » Maintain contact with friends and family, and talk to support people about your experiences and feelings.
- » Increase interaction with professional peers.
- » Engage in activities that balance work and non-work life.
- » Maintain connections with organisations or activities that are meaningful to you.

Seek help if needed from:

- » your GP
- » colleagues

Appendix 6:

Additional resources

The National Diabetes Services Scheme (NDSS)

The National Diabetes Services Scheme, otherwise known as the NDSS, is an initiative of the Australian Government administered by Diabetes Australia. It is a service that provides access to subsidised diabetes self-management products. The NDSS is also designed to enhance the capacity of people with diabetes to understand and manage their diabetes, as well as to assist people to minimise the impact of diabetes and improve people's overall health.

As of June 2015, there were approximately 1.2 million people registered on the NDSS with a diagnosis of either type 1 diabetes, type 2 diabetes, gestational or other diabetes. This is Australia's fastest growing chronic disease and the seventh leading cause of death by illness.⁴⁵

NDSS services

The NDSS offers a range of support services to assist a person with diabetes, their carer and/or family. The services include access to information about diabetes self-management, ordering products as well as information on services available in the area. NDSS services can be accessed through NDSS Agents, which are diabetes organisations in each state and territory. Agents can be located by calling the NDSS Helpline **1800 637 700**, by visiting the website at ndss.com.au or emailing info@ndss.com.au.

NDSS products

The NDSS offers a large range of subsidised products including blood glucose checking strips, urine checking strips, free insulin syringes and pen needles as well as pump consumables. NDSS products can be accessed through Access Points in all states and territories. Access Points are managed by the NDSS Agents and are mainly located in community pharmacies. Access Points can be accessed by calling the NDSS Helpline **1800 637 700** or by visiting the website at ndss.com.au.

Information sheets

Free information sheets are available on topics such as diabetes, other health issues associated with diabetes, healthy eating, Glycaemic Index and food. Some information sheets are available in multiple languages. Visit ndss.com.au or call the NDSS Helpline **1800 637 700** to order copies.

Gestational diabetes

Information and resources on gestational diabetes are available at ndss.com.au/gestational-diabetes.

Pregnancy and diabetes

Information and resources on pregnancy and diabetes are available at ndss.com.au/pregnancy.

NDSS online programme

Online programs for diabetes management are available at ndss.com.au.

- » MyDESMOND
- » Type 2 diabetes and me

National Health Services Directory

Find a general practice, pharmacy, emergency department or hospital near you healthdirect.gov.au.

Bush Support Line

The Bush Support Line provides confidential counselling to remote health workers (24-hour service). The focus is on prevention and recovery. Visit crana.org.au/workforce-support/bush-support-services.

Lifeline Australia

Lifeline Australia can be contacted on **13 11 14** or via the website at lifeline.org.au. Lifeline Australia provides a free, confidential and anonymous, 24-hour telephone counselling service for adults needing emotional support. Lifeline Australia also has a range of information and resources available from their website, about providing care in times of crisis, including a toolkit on 'Helping your children cope with the after effects of the bush fire disaster'. Visit lifeline.org.au.

Beyond Blue

Beyond Blue is a national organisation that has a range of information and resources associated with depression and anxiety. Beyond Blue has an information line, **1300 22 4636**, which provides callers with access to information and referral to relevant services. Beyond Blue can also be contacted via their website at beyondblue.org.au.

MensLine Australia

MensLine Australia provides a free, confidential and anonymous, 24-hour professional telephone counselling service for men needing emotional support or in crisis. MensLine offers a call back service for continued support and is recommended for volunteers and emergency services personnel (men and women) experiencing psychosocial crisis. MensLine Australia can be contacted on **1300 78 99 78** or via mensline.org.au. MensLine also has a range of information and resources available from their website, about providing support and taking care of yourself in times of crisis.

My Health Record

The My Health Record is a shared electronic health summary set up by the Australian government. The purpose of the My Health Record is to provide a secure electronic summary of people's medical history which will include information such as current medications, adverse drug reactions, allergies and immunisation history with the aim of improving the sharing of information amongst health care providers to improve patient outcomes. My Health Record can be accessed through myhealthrecord.gov.au.

Appendix 7:

State and territory authorities

The authorities responsible for planning and responding to disasters and emergencies differ significantly throughout Australia. The table below lists authorities responsible for disaster and emergency response in Australia's states and territories.

Victoria	Tasmania
Bushfire – County Fire Authority 000 / VicEmergency Hotline 1800 226 226 cfa.vic.gov.au	Bushfire – Tasmania Fire Service / Department of Primary Industries, Parks, Water and Environment 000 fire.tas.gov.au
Earthquake – SES 132 500 / 000 ses.vic.gov.au	Earthquake – Police 131 444 / 000 police.tas.gov.au
Floods – SES 132 500 / 000 ses.vic.gov.au	Floods – SES / Police 132 500 / 000 ses.tas.gov.au
Heatwave – Police 131 444 / 000 police.vic.gov.au	Human Disease - Department of Health and Human Services 1800 671 738 dhhs.tas.gov.au
Human Disease – Department of Health and Human Services 1300 651 160 health.vic.gov.au/emergency	Storm – SES 132 500 / 000 ses.tas.gov.au
Storm – SES 132 500 / 000 ses.vic.gov.au	Tsunami – SES 132 500 / 000 ses.tas.gov.au
Tsunami – SES 132 500 / 000 ses.vic.gov.au	
Health Direct 1800 022 222 to speak to a registered nurse healthdirect.gov.au	Health Direct 1800 022 222 to speak to a registered nurse healthdirect.gov.au
Diabetes Victoria 03 9667 1777 / 1300 437 386 diabetesvic.org.au	Diabetes Tasmania 03 6215 9000 diabetestas.org.au

Australian Capital Territory	South Australia
Bushfire – Emergency Services Agency (Fire and Rescue/Rural Fire Service) 000 esa.act.gov.au	Bushfire – Country Fire Service 000 ses.sa.gov.au
	Earthquake – Police 131 444 / 000 sapolice.sa.gov.au
Floods – ACT Emergency Services Agency (SES) SES 132 500 / 000 esa.act.gov.au	Floods – SES 132 500 / 000 ses.sa.gov.au
Human Disease – ACT Health 02 6205 1700 health.act.gov.au	Health Direct 1800 022 222 to speak to a registered nurse healthdirect.gov.au
Storm – ACT Emergency Services Agency (SES) 132 500 / 000 esa.act.gov.au	Human Disease – Department of Health 1300 232 272 health.sa.gov.au
Health Direct 1800 022 222 to speak to a registered nurse healthdirect.gov.au	Storm – SES 132 500 / 000 ses.sa.gov.au
Diabetes NSW and ACT 02 6288 9830 / 1300 342 238 diabetes-act.com.au	Diabetes SA 08 8234 1977 / 1300 198 204 diabetessa.com.au
New South Wales	Queensland
Bushfire – NSW Rural Fire Service (RFS) 000 rfs.nsw.gov.au	Bushfire – Queensland Fire and Rescue Service 000 fire.qld.gov.au
Earthquake – Police 131 444 / 000 police.nsw.gov.au	Cyclone – SES 132 500 / 000 emergency.qld.gov.au/ses
Floods – SES 132 500 / 000 ses.nsw.gov.au	Earthquake – SES 000 emergency.qld.gov.au/ses
Heatwave – Police 131 444 / 000 police.nsw.gov.au	Floods – SES 132 500 / 000 emergency.qld.gov.au/ses
Human Disease – NSW Health 1300 066 055 health.nsw.gov.au	Human Disease – Queensland Health 07 3328 9724 health.qld.gov.au
Storm – SES 132 500 / 000 ses.nsw.gov.au	Storm – SES 132 500 / 000 emergency.qld.gov.au/ses

New South Wales	Queensland
Tsunami – Police 131 444 / 000 police.nsw.gov.au	Health Direct 1800 022 222 to speak to a registered nurse healthdirect.gov.au
Health Direct 1800 022 222 to speak to a registered nurse healthdirect.gov.au	Diabetes Queensland 07 3506 0999 diabetesqld.org.au
Diabetes NSW 02 9552 9942 diabetesnsw.com.au	
Western Australia	Northern Territory
Bushfire – Department of Fire and Emergency Services (DFES) / Department of Environment and Conservation 000 dfes.wa.gov.au	Bushfire – Bushfire NT 000 lrm.nt.gov.au/bushfires
Earthquake – DFES 132 500 / 000 dfes.wa.gov.au	Cyclone – Police/Northern Territory Emergency Service (NTES) 132 500 / 000 pfes.nt.gov.au
Floods – DFES 132 500 / 000 dfes.wa.gov.au	Earthquake – Police / NTES 131 444 / 000 pfes.nt.gov.au
Heatwave – State Health Coordinator 08 9222 4222 public.health.wa.gov.au	Floods – Police / NTES 132 500 / 000 pfes.nt.gov.au
Human Disease – Department of Health 08 9388 4878 / A/H 08 9328 0553 public.health.wa.gov.au	Human Disease – Department of Health 08 8922 8044 pfes.nt.gov.au
Storm – DFES / SES 132 500 / 000 dfes.wa.gov.au	Storm - Police / NTES 132 500 / 000 pfes.nt.gov.au
Tsunami – DFES 132 500 / 000 dfes.wa.gov.au	Tsunami – Police / NTES 131 444 / 000 pfes.nt.gov.au
Cyclone – DFES 132 500 / 000 dfes.wa.gov.au	Health Direct 1800 022 222 to speak to a registered nurse healthdirect.gov.au
Health Direct 1800 022 222 to speak to a registered nurse healthdirect.gov.au/	Healthy Living NT Darwin 08 8927 8488 Alice Springs 08 8952 8000 healthylivingnt.org.au
Diabetes WA 08 9325 7699 / 1300 001 880 diabeteswa.com.au	

References

1. Bureau of Transport Economics. Economic Costs of Natural Disasters in Australia, Report 103. Canberra, Australia (2001). [Cited 10 August 2015]. Available from: https://bitre.gov.au/publications/2001/files/report_103.pdf
2. Australian Psychological Society, Australian Red Cross. Psychological first aid: An Australian Guide 2001. [Cited 1 September 2015]. Available at psychology.org.au/Assets/FilesRed-Cross-Psychological-First-Aide-Book.pdf
3. Miller AC, Arquilla B. Chronic diseases and natural hazards: impact on disasters on diabetic, renal and cardiac patients. *Prehospital Disaster Med.* 2008 Mar; 23(2):185.
4. The Sendai Framework for Disaster Risk reduction 2015 – 2030. 18 March 2015.
5. Battersby M, Higgins P, Collins J, Reece M, Holmwood C, and Daniel B. Partners in Health: the development of self-management for SA HealthPlus participants in The Australian Coordinated Care Trials: Recollections of an Evaluation. Publications Production Unit (Public Affairs, Parliamentary and Access Branch) Commonwealth Department of Health and Ageing, Canberra, Australia. pp. 201-211 (2002).
6. Knox SA, Harrison CM, Brit HC, et al. Estimating prevalence of common chronic morbidities in Australia. *Medical Journal of Australia* 2008; 189(2):66-70.
7. Department of Human Resources and Australian Red Cross, Victoria, Australia. (2013) Emergency Relief Handbook: A Planning Guide.
8. 8Diabetes ACT. What is diabetes? [internet]. (2014) [cited 10 August 2015].
9. Diabetes ACT. Type 1 diabetes [internet]. (2014) [cited 10 August 2015].
10. Diabetes ACT. Type 2 diabetes [internet]. (2014) [cited 10 August 2015].
11. Diabetes ACT. Gestational diabetes [internet]. (2014) [cited 10 August 2015].
12. Australia EM. Australian Emergency Management Glossary (1998). Attorney-General's Department, Australian Government, Canberra.
13. Guha-Sapir D, Hoyois P, Below R. Annual Disaster Statistical Review 2014: The Numbers and Trends. Brussels: CRED. 2014.
14. Takakura R, Himeno S, Kanayama Y, Sonoda T, Kiriya K, Furubayashi T, et al. Follow-up after the Hanshin-Awaji earthquake: diverse influences on pneumonia, bronchial asthma, peptic ulcer and diabetes mellitus. *Internal Medicine (Tokyo, Japan).* 1997;36(2):87-91.
15. Ng J, Atkin SL, Rigby AS, Walton C, Kilpatrick ES. The effect of extensive flooding in Hull on the glycaemic control of patients with diabetes. *Diabet Med.* 2011;28(5):519-24.
16. Miller-Archie SA, Jordan HT, Ruff RR, Chamany S, Cone JE, Brackbill RM, et al. Posttraumatic stress disorder and new-onset diabetes among adult survivors of the World Trade Center disaster. *Prev Med.* 2014;66:34-8.
17. Kario K, McEwen BS, Pickering TG. Disasters and the heart: A review of the effects of earthquake-induced stress on cardiovascular disease. *Hypertens Res.* 2003;26(5):355-67.
18. Coughlin SS. Post-traumatic Stress Disorder and Cardiovascular Disease. *Open Cardiovasc Med J.* 2011;5:164-70.
19. Fujihara K, Saito A, Heianza Y, Gibo H, Suzuki H, Shimano H, et al. Impact of psychological stress caused by the Great East Japan Earthquake on glycemic control in patients with diabetes. *Exp Clin Endocrinol Diabetes.* 2012;120(9):560-3.
20. Arrieta MI, Foreman RD, Crook ED, Icenogle ML. Providing continuity of care for chronic diseases in the aftermath of Katrina: From field experience to policy recommendations. *Disaster Med Public Health Prep.* 2009;3(3):174-82.
21. Mori K, Ugai K, Nonami Y, Kirimura T, Kondo C, Nakamura T, et al. Health Needs of Patients With Chronic Diseases Who Lived Through the Great Hanshin Earthquake. *Disaster Management and Response.* 2007;5(1):8-13.
22. Health Direct Australia. After hours GP helpline. Available from: <http://healthdirect.gov.au/after-hours-gp-helpline> [Cited 18 September 2015].
23. Commonwealth Department of Health. Canberra, Australia. The Pharmaceutical Benefits Scheme. pbs.gov.au/info/general/faq. [Cited 16 August 2015].

24. Diabetes Australia. Canberra. Hypoglycaemia and diabetes. Talking diabetes No. 23. Updated August 2009. A diabetes information series from State/Territory organisations of Diabetes Australia. [Cited 15 September 2015]. Available from: static.diabetesaustralia.com.au/s/fileassets/diabetes-australia/ca7fcd15-2a3a-41c8-871b-8b410f48de74.pdf
25. Neria Y, Galea S, Norris F. Mental health and disasters. New York: Cambridge University Press. 2009.
26. Sports Medicine Australia – Diabetes and exercise. Fact sheet. <http://sma.org.au/wp-content/uploads/2010/06/Diabetes-and-exercise-fact-sheet-FINAL2010.pdf>. [Cited 10 August 2015].
27. Diabetes NSW. Talking Diabetes No. 27 – Physical Activity & Type 2 Diabetes. <http://diabetesnsw.com.au/wp-content/uploads/2014/12/DA-27-Physical-health-and-diabetes.pdf>. [Cited 10 August 2015].
28. Diabetes Disaster Preparedness. [Cited 10 August 2015]. Available from: nj.gov/health/fhs/documents/diabetes_disaster_guidelines.
29. Trench Foot or Immersion Foot. Centre for Disease Control, Atlanta USA. Updated June 2014. [Cited 10 August 2015]. Available from: <http://emergency.cdc.gov/disasters/trenchfoot.asp>
30. 6th Edition Emergency Medicine: A Comprehensive Study Guide. 2004 34th Edition. The Sanford Guide to Antimicrobial Therapy. 2004.
31. Coleman K, Austin BT, Brach C, Wagner EH. Evidence on the Chronic Care Model in the New Millennium. Health Aff (Millwood). 2009 Jan-Feb; 28(1):75-85.
32. Stockwell DH, Madhavan S, Cohen H, Gibson G and Alderman MH. The determinants of hypertension awareness, treatment, and control in an insured population. American Journal of Public Health 84 (1994): 1768-1774.
33. Kenny SJ et al. Survey of physician practice behaviors related to diabetes mellitus in the U.S. Physician adherence to consensus recommendations. Diabetes Care 16 (1993): 1507-1510.
34. Perrin JM, Homer CJ, Berwick DM, Woolf AD, Freeman JL, Wennberg JE. Variations in rates of hospitalization of children in three urban communities. New England Journal of Medicine 320: 1183-1187.
35. Ryan BJ, Franklin RC, Burkle FM, Watt K, Aitken P, Smith EC, et al (2015). Defining, describing and categorizing public health infrastructure priorities for cyclone, flood and storm related disasters. Disaster Medicine and Public Health Preparedness (Submitted).
36. Rossi M, Young V, Martin J, Douglas B, Campbell K. (2011). Nutrition during a natural disaster for people with end-stage kidney disease. Renal Society of Australasia Journal. 7(3),69-71.
37. Diet – chronic kidney disease [internet] Updated 10 December 2013. [Cited 10 August 2015]. Available from: <https://nlm.nih.gov/medlineplus/ency/article/002442.htm>
38. Battersby, M, et al SA HealthPlus: a controlled trial of a statewide application of a generic model of chronic care. Milbank Quarterly. 2007; 85(1) 37-67.
39. World Health Organization (2002) Innovative care for chronic diseases. Building blocks for action. Global Report. World Health Organization, Geneva.
40. National Health Priority Action Council (2006). National Chronic Disease Strategy, Australian Government Department of Health and Ageing, Canberra.
41. World Health Organization (2004). A Glossary of Terms for Community Health Care and Services for Older Persons. World Health Organization, Japan.
42. United States Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Healthy People 2010. [Cited 10 August 2015]. Available from: health.gov/healthypeople
43. Royal Australian College of General Practitioners 2010 Standards for General Practice, 4th edition: A template for quality care and risk management in contemporary Australian General Practices, Royal Australian College of General Practitioners, Melbourne.
44. Osilla Institute for Health Personnel. Personal Support Worker. [Cited 18 September 2015]. Available from: osillainstitute.com/what-is-psw
45. All types of diabetes. [Internet] National Diabetes Services Scheme, Canberra. Data Snapshot at 30 June 2015. [Cited 15 July 2015].
46. Diabetes Australia. Depression and Mental Health [internet]. (2015) [cited 10 January 2016].

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