Diabetes in Australia

The latest data about the incidence (the number of new cases) of insulin-treated diabetes from the National Diabetes Register Between 2000 and 2009, over 222,500 people began using insulin to treat their diabetes. The incidence rate of Type 1 diabetes among children aged 0–14 increased between 2000 and 2004, and then remained relatively stable until 2009. Between 2000 and 2009, the incidence rate of Type 1 diabetes among people aged 15+ decreased, but the incidence rate of insulin-treated Type 2 diabetes increased. New cases of gestational diabetes among women aged 15–49 who gave birth in hospital rose by 15% between 2000–01 and 2008–09.

Diabetes in Australia

The Australian Bureau of Statistics’ 2007–08 National Health Survey. Key findings:

- In 2007–08, an estimated 898,800 Australians had been diagnosed with diabetes (excluding gestational diabetes) at some time in their lives.
- 87,100 had been diagnosed with Type 1 diabetes.
- 787,500 had been diagnosed with Type 2 diabetes.
- 56% of those diagnosed with diabetes were male and 44% were female.
- About 96% of people with diabetes were 35 years old or more, and 43% were aged 65 years or more.
- After accounting for differences in age, the proportion of people with diabetes was similar in major cities, regional areas and remote areas.

Diabetes in Australia

Diabetes in pregnancy is common, affecting about 1 in 20 pregnancies

- Pre-existing diabetes in pregnancy affected less than 1% of pregnancies, and gestational diabetes mellitus (GDM) affected about 5% in 2005–07.
- Among Aboriginal and Torres Strait Islander mothers, pre-existing diabetes affecting pregnancy was 3 to 4 times as common, and GDM twice as common, as in non-Indigenous mothers. The rate of Type 2 diabetes in Indigenous mothers was 10 times as high.
- Mothers born in high-diabetes-risk regions, such as Polynesia, Asia and the Middle East, were slightly more likely to have Type 2 diabetes, and 3 times as likely to have GDM, as mothers born in Australia.
- Aboriginal and Torres Strait Islander mothers and their babies were more likely to have most adverse effects of pregnancy, labour and delivery studied than non-Indigenous mothers and their babies.

Diabetes in Australia

The impact of diabetes in Australia

Nerve damage in the lower limbs affects around 13% of Australians with diabetes, diabetic retinopathy occurs in over 15% of Australians with diabetes, and diabetes is now the leading cause of end-stage kidney disease. In people with diabetes, cardiovascular disease (CVD) is the primary cause of death, with around 65% of all CVD deaths in Australia occurring in people with diabetes or pre-diabetes. Furthermore, 41% of people with diabetes also report poor psychological well-being with reports of anxiety, stress, depression and feeling ‘burned-out’ from coping with their diabetes. Moreover, diabetes is ranked in the top 10 leading causes of death in Australia.

Diabetes in Australia

Indigenous health

Indigenous Australians are 3 times more likely to have type 2 diabetes compared to non-Indigenous Australians. This number of people with diabetes is even higher for those Indigenous Australians living in remote areas. Indigenous Australians are also at greater risk of complications than non-Indigenous Australians, with a 10-fold higher risk of kidney failure and up to 8-fold higher risk of high blood pressure.
Diabetes in Australia

Growth of diabetes

If diabetes continues to rise at the current rates, up to 3 million Australians over the age of 25 years will have diabetes by the year 2025. For type 2, this is likely driven by rising obesity, the ageing population, dietary changes, and sedentary lifestyles. Obesity is a major contributor to type 2 diabetes with estimates showing that eliminating obesity from the population can potentially reduce the incidence of type 2 diabetes by over 40%. The rising incidence of type 1 diabetes is also contributing to the growth of diabetes in Australia, and the prevalence of type 1 diabetes is predicted to increase by 10% between 2008 and 2013.

Data from 2010 show that only about half of Australians with diabetes were achieving adequate control of their blood glucose levels. Poor control of blood glucose means a higher risk of developing diabetes complications.

What this means for Australia

Within 20 years, there may be over 3 million Australians with diabetes. This will also mean more people with complications of diabetes. This is even more challenging for Indigenous Australians. Even now, most Indigenous families have at least one person already affected by the complications of diabetes.

As diabetes already costs the Australian economy at least $16 billion annually, investment in prevention for type 2, and research to find a cure for type 1 diabetes, is of great importance.

Conclusion

It is essential that governments and health professionals become more proactive in educating the public in the risks and dangers of Diabetes and the need to institute programs to highlight the urgency.

4% of the people who have diabetes account for 12% of the health costs.

Diabetes

- Diabetes affects 300 million people worldwide.
- By the year 2025 the prevalence of diabetes is expected to rise to 500 million people globally.
- 60-70% of those with diabetes will develop peripheral neuropathy, or lose sensation in their feet.

Diabetes in China

The overall prevalence of diabetes was estimated to be 11.6% in the Chinese adult population. The prevalence among men was 12.1% and among women was 11.0%. In addition, the prevalence of prediabetes was estimated to be 50.1% in Chinese adults: 52.1% in men and 48.1% in women. The prevalence of diabetes was higher in older age groups, in urban residents, and in persons living in economically developed regions. Among patients with diabetes, only 25.8% received treatment for diabetes, and only 39.7% of those treated had adequate glycemic control.

CONCLUSIONS AND RELEVANCE:

The estimated prevalence of diabetes among a representative sample of Chinese adults was 11.6% and the prevalence of prediabetes was 50.1%. Projections based on sample weighting suggest this may represent up to 113.9 million Chinese adults with diabetes and 493.4 million with prediabetes. These findings indicate the importance of diabetes as a public health problem in China.
Diabetes In Australian terms

The total financial cost of type 2 diabetes is estimated at $16 billion. Of this, carer costs were estimated as $4.4 billion, productivity losses were $4.1 billion, health system costs were $1.1 billion and $1.1 billion was due to obesity. The total yearly cost to the nation for type 1 diabetes was calculated at $570 million. 4% of the people who have diabetes account for 12% of the health costs.

Diabetes

- DIABETES-related amputations have increased by 30% in the past decade with one Australian losing a limb every 3 hours, prompting calls to urgently improve care of diabetes-related foot disease in Australia.

Diabetes In Australian terms

- Up to 25% of those with diabetes will develop a foot ulcer.
- 15% of diabetics have heart disease compared with 2.5% in non-diabetics.
- Diabetes is the leading cause of kidney failure.
- Diabetes is the most common cause of blindness in over 60’s.
- Diabetes is Australia’s fastest growing chronic condition, with a reported 275 people diagnosed every day.

Diabetes

- Diabetes is a major risk factor for morbidity and mortality due to coronary heart disease, cerebro-vascular disease and peripheral vascular disease.
- Multiple risk factors for macrovascular disease, in addition to diabetes itself, are frequently found in individuals with diabetes. Thus, in patients with diabetes, the risk factors of smoking, hyperlipidaemia and hypertension should be aggressively addressed and if possible removed.

Diabetes

- Type-1 Diabetes
  - Represents 10 -15% of all cases
  - Occurs when the pancreas gland no longer produces insulin.
  - Is one of the most common chronic childhood diseases in developed nations
  - IS NOT CAUSED BY LIFESTYLE FACTORS

- More than half of all foot ulcers (wounds) will become infected, requiring hospitalization and 1 in 5 will require an amputation.
- After a major amputation, 50% of patient will have their other limb amputated within 2 years.
Diabetes
• Type-1 Diabetes  Symptoms
Usually abrupt onset can include excessive thirst and urination, unexplained weight loss, weakness and fatigue, irritability

Treatment
Lifelong injections of insulin, regular blood Glucose testing, healthy eating plan and regular exercise

Diabetes
• Type 1: usually occurs in people under 30 whose bodies stop producing insulin.
This form of diabetes accounts for about 10% of all cases of diabetes. Type 1 diabetes is not currently preventable.

Diabetes
• Type-2 Diabetes
Represents 85 -90% of all cases
Occurs when the pancreas gland not producing enough Insulin and the insulin is not working effectively.
A genetic disposition and LIFESTYLE FACTORS contributes to its development
Risk factors include overweight/obesity

Diabetes
• Type-2 Diabetes – Symptoms
Often goes unnoticed as the disease develops gradually. Similar to those of type-1 plus blurred vision, skin infections, slow healing, tingling or Numbness in the feet. Sometimes no symptoms are noticed

Treatment
Lifestyle modification, diet, medication or Insulin

Gestational Diabetes Mellitus (GDM):
What is Gestational Diabetes?
Pregnant women who have never had diabetes before but who have high blood sugar (glucose) levels during pregnancy are said to have gestational diabetes. It affects about 4% of all pregnant women. This is a temporary form of diabetes that occurs during pregnancy when various hormones prevent the body’s naturally-produced insulin from working properly.

Gestational Diabetes Mellitus (GDM):
Untreated or poorly controlled gestational diabetes can hurt your baby. When you have gestational diabetes, your pancreas works overtime to produce insulin, but the insulin does not lower your blood glucose levels. Although insulin does not cross the placenta, glucose and other nutrients do. So extra blood glucose goes through the placenta, giving the baby high blood glucose levels.
Gestational Diabetes Mellitus (GDM):

This causes the baby's pancreas to make extra insulin to get rid of the blood glucose. Since the baby is getting more energy than it needs to grow and develop, the extra energy is stored as fat.

Gestational Diabetes Mellitus (GDM):

Although usually treated with healthy diets, insulin injections may be required. Healthy Eating and physical activity help women who have had GDM from contracting type 2 diabetes in later life. Without these strategies, over 50% will develop type 2 diabetes over the next 10 years.

Prediabetes

Prediabetes is defined by plasma glucose levels that are elevated above the normal range, but below the threshold for diabetes. Early diagnosis of prediabetes identifies persons at risk and prevents progression to type 2 diabetes mellitus (T2DM) and cardiovascular disease.

Prediabetes

Prediabetic states are prevalent among children and adolescents. The prevalence of impaired fasting glucose (IFG) ranges from 13% to 40% and of impaired glucose tolerance (IGT), from 2% to 5%, whereas approximately 20% have HbA1c levels of 5.7%-6.4%. The prevalence of prediabetes is significantly higher among obese pubertal children with a positive family history. Moreover, the prevalence of prediabetes has increased markedly over recent decades.

Prediabetes

• The prevalence of prediabetes varies among different studies of obese children. IGT was detected in 25% of obese children aged 4-10 years and 21% of obese adolescents aged 11-18 years. Family history is a strong risk factor. The prevalence of prediabetes is 2.4-fold higher in boys.


Initiate insulin if it is unclear whether the child has type 1 or type 2 diabetes
After diagnosis, administer Metformin as first line therapy with lifestyle interventions
HbA1c monitoring every three months a target HbA1c of below 7%
Finger-stick BGM for patients on insulin or who are not meeting treatment goals
Incorporate weight management dietary guidelines
60 minutes of moderate-to-vigorous exercise per day and limit non-academic “screen time” to under two hours per day
Diabetes Complications

- Eye Disease (Retinopathy)
- Kidney Disease (End Stage Renal Disease) requiring haemo-dialysis
- Heart Disease/Stroke- associated with high blood pressure and high blood fats (cholesterol and triglycerides)
- Erectile Dysfunction

Diabetic Foot Ulcers, in many cases, are Preventable

In developed countries, diabetic foot disease is the most common cause of hospital admission in people with Diabetes.

Diabetes is associated with a 15 times increased risk of undergoing a Lower Extremity Amputation (LEA) compared to people without Diabetes.

What is the Cost of a DFU?

- High health costs ($)$ plus ....
- Other costs to the PATIENT
  - Severely limited activity and productivity
  - Job loss in many cases
  - Psychosocial issues
    - Anxiety / Depression
    - Financial burden
    - Restricted lifestyle
    - Wound odour and discharge
  - Duration......

Why does it matter?

Foot ulceration precedes LEA in 85% of cases, therefore once a foot ulcer presents, aggressive management is necessary to try to prevent escalation to LEA.

Minor tissue injury was reported as the pivotal event in 86% of cases resulting in amputation.

Pecoraro, RE 1990

The longer the ulcer persists, the greater the chances of developing a serious infection that can lead to hospitalisation and possible amputation.

Therefore, EARLY detection and intervention are critical to the outcome.

If DFU's not reduced by 50% in 4 weeks: Best Practice Guidelines recommend referral to a multidisciplinary High-Risk-Foot Clinic.

Shethan, P et al. Diabetes Care 2003, 26:6
Emergency Medical Intervention Required...

- Systemic Infection
- Gangrene
- Critical ischaemia

Diabetes

- How does diabetes affect healing and what are the factors influencing ulcer formation
- Reduced Blood Supply-atherosclerosis
- Peripheral Neuropathies - sensory, motor, autonomic and callus formation
- Limited Joint Mobility
- Bony Deformity- charcot joints
- Elevated Pressure- abnormal plantar pressure

Can start off Small

May lead to Amputation

Neuropathic or Ischaemic

- Painless (often unnoticed)
- Bony prominence or area of pressure
- Good blood supply for healing
- Painful
- Not essentially pressure area
- Poor blood supply will negatively affect healing

...or combination of both

Abnormal Foot Mechanics / Deformity
Charcot’s Neuroarthropathy

Complication of (but not limited to) Diabetic Peripheral Neuropathy
Process of destruction and re-organisation of weight-bearing joints
Hot, swollen foot (in the absence of a wound)

Suspected Charcot’s?
refer to High-Risk-Foot Clinic

- Acute phase → need to immobilize
- Repair process can take months
- Monitor temp and oedema
- Then, custom orthotics and MGF
- ? Surgery

Diabetes

- Peripheral Vascular Disease.
  A major consequence of diabetes is the damage to both macro-vascular and micro-vascular systems. The resultant reduction in perfusion will contribute to the development of ulcers and also in a delay in wound healing

Diabetes

- Peripheral Neuropathy
  The lack of feeling or diabetic peripheral sensory neuropathy is the major risk factor for foot ulceration. The fact that the diabetic patient is unable to detect even minor injuries or discomfort in the feet will often place the patient as risk of developing a small wound. Due to the lack of sensation the patient is unaware of the tissue damage and the wound will progress and only be noticed when it is large enough to be noticed.

Diabetes

- Peripheral Neuropathy
  The prevalence of a positive test when screening for nephropathy among those with undiagnosed diabetes was 26.5% compared with 7.1% in those with no diabetes ( P < .01)

Diabetes

- Motor neuropathy
  leads to small muscle wasting with consequent imbalance of flexor and extensor muscles, leading to clawing of the toes and prominence of the metatarsal heads.
Diabetes

- Limited Joint Mobility
  This will increase foot pressures and increases the risk of ulcer development.
- Bony Deformity
  Deformities of the ankle, feet, bunions and toes will all increase the risk of ulcers forming.
  Charcot joint is one with simultaneous bone and joint destruction, with fragmentation and remodelling of the joint.

Motor neuropathy

- Autonomic neuropathy
  Affects the lower limbs leading to reduced sweating and results in dry skin that is prone to crack and fissure. The development of excess callus will elevate plantar dynamic pressure and when combined with peripheral neuropathy may lead to ulcer development.

The Diabetic Foot

- Diabetic foot ulceration
  - neuropathies
    - sensory, motor, autonomic
    - abnormal plantar pressure
    - risk of amputation
  - may need
    - glycaemic control
    - foot care - education
    - podiatry
    - pressure relief
    - high risk foot clinic

The UT Diabetic Foot Wound Classification System

- Impaired Inflammatory Response
- Five Fold Risk of Infection
- Associated Small Vessel Disease
- Nerve Damage with Diminished Pain Sensation and Nerve Response

Ulcers will Heal if
- Circulation is adequate
- Infection is Controlled
- Pressure is released
- A Moist Environment is Maintained
- Antiseptics are generally not recommended as they may affect healing

Neuropathy: Monofilament 10g
Sensitive and specific for diabetic peripheral neuropathy

The four sites for monofilament testing. Absence of perception of one or more sites indicates neuropathy. Smieja et al., 1999

Diabetic Feet
High heels place your full body weight on your toes and metatarsals leading to Abnormalities as bones under stress change shape. Also reduce movement on the arches of the feet this reduces the muscle pump required for venous return leading to ache in the legs. Can also make lower leg muscles tight causing lower back pain.
General Advice

1. Inspect your feet daily for blisters, bleeding, or lesions between toes. Use a mirror to see the bottom of the foot and the heel.
2. Have a family or friend check your feet if you are unable to do so.
3. Have regular foot examinations by your diabetic foot care specialist.
4. Always remove both shoes and stockings when visiting your doctor.
5. Always wear well-fitted stockings or socks with your shoes. Padded hosiery may reduce pressure and be more protective.
6. Inspect the soles and inside your shoes for foreign objects before putting them on.
7. Shoes should be properly measured, comfortable, and easy to put on at the time of purchase.
8. Wear leather shoes with adequate room for the toes. Running or athletic shoes are best for recreational walking.
9. In cold weather, wear insulated boots or heavier socks. Be sure the shoes allow enough room to allow for heavier socks.
10. Do NOT use hot water bottles or heating pads to warm your feet. Use warm socks instead.
11. Do NOT soak your feet.
12. Do NOT use acids or chemical corn removers.
13. If you've lost sensation, do NOT walk barefooted in the house, outside, or at the beach.
14. Maintain good diabetes control and do not smoke.
15. Do NOT perform "bathroom surgery" on corns, calluses, or ingrown toenails.
16. Wash feet daily and be sure to dry well between the toes. Apply moisturizing cream liberally, but avoid between the toes.
17. Test the temperature of the bath water with your ELBOW or THERMOMETER. Do NOT let hot water drip onto your toes.
18. Call your foot care specialist immediately if you detect a new lesion or if your foot becomes swollen, red, or painful. Stay off your foot until you see your doctor.
19. Learn all you can about your diabetes and how it can affect your feet.
MANAGEMENT PRINCIPLES

- Assessment of the diabetic foot ulcer is essential. The main areas which need to be assessed are:
  - The Blood Supply
  - Infection
  - Callus
  - Neuropathy

- The Blood Supply
  If there is a reduced blood supply or a lack of blood to the periphery wounds will not generally heal. It is essential for the patient to have a vascular assessment and consideration given to surgical intervention.

- Infection
  A major result of infection in these diabetic wounds is the development of osteomyelitis. Should infection be present the use of systemic antibiotic is indicated and an x-ray and bone scan should be considered to eliminate the presence of osteomyelitis.
INFECTION

Will Retard Healing

Host

Bacterial quantity and virulence

Bacterial Balance

Local perfusion

Immunosuppression

Diabetes

Medications

Adhesins

Cell Capsules

Biofilms

Antibiotic Resistance

Identification of Different Bacterial Genuses in a Biopsy of a Chronic Pressure Ulcer

A total of 36 different bacterial genuses were identified by nucleic acid sequences. The % represents the percentage of the total sequences analyzed within the sample. The 8 main of the Bacteria represent 70% and 7 of the 8 are Anaerobes.

MANAGEMENT PRINCIPLES

 Callus
Removal of excess callus is important and assessment of the feet to establish any increased pressures on the plantar surfaces that stimulate keratinisation. Compliments David Armstrong, D.P.M.

MANAGEMENT PRINCIPLES

 Neuropathy
The insidious nature of the peripheral neuropathy is such that a minor injury may occur, often due to pressure from ill-fitting shoes, and not be identified. It is very important for all diabetic patients to examine their feet daily, this includes the ball of the foot, heal and between the toes. If any abnormal skin breaks are found these should be treated at once.

MANAGEMENT PRINCIPLES

The specific management of the diabetic wound will depend on the assessment of the wound and its characteristics. The most important considerations are the elimination of any infection, the reduction of pressure and the maintenance of a moist environment.

MANAGEMENT PRINCIPLES

With diabetics with major foot problems the consultation with a podiatrist or referral to a high risk foot clinic may be necessary. There may be a need for special footwear, padding or other devices to eliminate the risk of damage and to aid in the healing of existing pressure wounds.

MANAGEMENT PRINCIPLES

 Paramount to any wound management or prevention strategies is to ensure that the blood sugar levels are maintained within normal levels as much as possible. It is the prolonger elevation of blood sugar which leads to much of the damage which contributes to the risk of wound development.
Management

The use of topical antiseptics may have a role in superficial infected foot ulcers. Povidone iodine in dilute strengths Betadine™ and a newer non-toxic iodine preparation Cadexomer Iodine, Iodosorb™, and the new Silver Dressings can be used to help reduce the surface bacteria in the wound. However, if the wound is infected the use of systemic antibiotics is essential.

Management

The removal of necrotic or non-viable tissue by surgical or autolytic debridement is often necessary. This will produce a cleaner base in the wound and make it more suitable for grafting or healing by secondary intention. There is clear evidence of improved healing. Steed published in 1996 in the Journal of the American College of Surgeons such a study.

Management

In addition to managing the wound it is important to ensure good glycaemic control, foot care – education and the use of podiatry, ensure pressure relief and in extreme cases use of a high risk foot clinic.

Management of a Neuropathic ulcer

- Aggressive sharp debridement of necrotic/devitalised tissue and callus
- Probe to determine depth and tissues involved, measure progress
- Exudate management and infection control
- Address mechanical factors: appropriate pressure redistribution devices are to be used at all times
- If not healing – FIND OUT WHY

Management of an Ischaemic Ulcer

- Investigate and address PAD
- Pain management may be required
- Appropriate footwear for Comfort and Safety
- Simple wound dressings ('clean and covered') NO TAPE
- No aggressive sharp debridement
- Consider HBO

AWMA standard 4.3

Ischaemic wounds – poor perfusion

NO moist wound healing
A1  Wounds heavily colonised, not necessarily infected but this is often a reason why the ulcers fail to heal or respond. Situation needs to be monitored closely.
Author, 1/30/2007

A2  Simple wound dressings means protection of friable tissue, reduce bacterial burden if needed, consider wounds may be unhealable.
Author, 1/30/2007
Management of a Neuro-ischaemic ulcer

- Investigate and address PAD
- Sharp debridement if needed
- Address mechanical factors WITH CARE
- Infection control
- Patient comfort
- Appropriate wound dressings – according to PWM
- Address footwear issues

Investigations in the presence of a DFU

Determine infective organisms

Wound scraping or Deep tissue specimen
Lipsky, B 2004

Probe to bone? Osteomyelitis?

General Medical Status

- HbA1c
- Co-morbidities
- Other complications

Partial Foot Amputation

- Risk of further amputations escalates after a patient has had an amputation
- Careful monitoring and management of all factors is necessary
- This is required for the rest of the patient’s life

Wound Management Principles

- Cleanse with minimal trauma
- Removal of slough / necrosis
- Adequate absorption of exudate
- Prevention / reduction of contamination / infection
- Protect damaged / healing tissue

CONSIDER:
Cost / Who and How often? / Ease of use / Skin condition (tape, bandage, stockinette)
Keep it simple
Dressings are secondary to pressure redistribution and revascularization

Cavanagh et al. 2005

Multi-factorial Approach

Good Outcomes

Hydrocolloids

- Contraindicated on foot ulcers in patients with diabetes and/or PAD
- Produces an anoxic environment, which may lead to increase in (anaerobic) infection and pain
- Exudate control is often not adequate using this dressing
  Foster et al. 1997
- At the recent IDF conference in Melbourne an Indian Diabetes Doctor uses this dressing in diabetic wounds

Unhealable Wounds

- Inoperable arterial disease
- Nephropathy
- Poor metabolic control
- Poor nutritional status
- Osteomyelitis
- Tophi.

GOALS: Infection control / Patient comfort / Protection from trauma / Simple, inexpensive wound dressings where possible

Need patient AND practitioner acceptance

Self-management

- Patient has responsibilities and needs to be involved
- What are their priorities?
- It is important that they understand what has happened to them and why
- Motivation to work together in order to achieve good outcomes

Always think about what you are trying to achieve, and think beyond the wound

Arrange referral for specialist consult if warranted
Consider obstacles to self-management:

- Poor mobility
- Poor vision
- Social isolation
- Cultural issues

Psychosocial issues

Psychosocial factors are now believed to be one of the most significant components impacting on the formation of foot ulcers, and their outcomes: Vileikyte, 2004; Price 2004

Diabetes is also associated with high rates of depression: de Groot et al, 2001

Depression reduces self-care behaviour: Black, Markidis & Ray, 2003 and poor self-care has a detrimental effect on the feet: Canavanagh et al 2005

Ask the Questions…

- Living arrangements
- Mental Health history
- Depression? Treatment?
- Drug / Alcohol abuse (include smoking)
- Social supports
- Occupational / Financial situation
- Family / relationship issues

Other stresses?

CONSIDER THE BIG PICTURE

...AND YOU THINK YOU HAVE STRESS...

Quality of Life

Norwegian study looking at QoL differences between people with DFU compared to D-NFU and Gen Pop.

Most important factor identified in DFU patients: Men Living Alone

Communicate with all health professionals involved with the patient’s care to achieve best outcomes
New Developments.

- There are a number of exciting developments in the area of diabetic wound treatment. The use of topically applied platelet derived growth factor is now in use in America and Europe the product is called Regranex®. There are also clinical trials of the application of bio-engineered human synthetic grafts to diabetic foot wounds such as Dermograft® and Apligraft®.
Necrobiosis Lipoidica Diabeticorum

Necrobiosis lipoidica diabeticorum is an unusual dermatologic condition with a characteristic clinical appearance and a clear association with diabetes mellitus. While various authorities consider NL to be primarily a disease of collagen degeneration or a vasculopathy, its exact etiology and pathogenesis remain unknown.

GCSF

Granulocyte colony-stimulating factor (GCSF) is a T cell-derived lymphokine which induces hematopoietic precursor cells to proliferate in vitro and differentiate to neutrophils and macrophages. GCSF also inhibits the motility of mature neutrophils (NIF-T activity), and primes neutrophils to enhance oxidative metabolism in response to the bacterial chemo-attractants.

Necrobiosis Lipoidica Diabeticorum

Patient 40yr Female Type 1 Diabetic with an eight year history of non-healing leg ulcers
Diagnosis: Necrobiosis Lipoidica Diabeticorum
Was first treated in the wound clinic Austin Hospital in late 2006
Necrobiosis Lipoidica Diabeticorum
This involves the application of recently Mixed GCSF (Lenograstim) 130 microgram Dissolved in 1ml of sterile water and diluted with sterile saline. The solution was applied to the wound and left in place undisturbed for 15-20 minutes. The wound was then covered with Mepiex® dressing and held in place with a light tubular bandage. The treatment was repeated in four days by the patient at home using a pre-loaded syringe containing the GCSF solution with the same application and covering methods.

Post Graduate Qualifications
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  – Graduate Certificate Wound Care
  – Graduate Diploma Wound Care
  – Masters Wound Care

Monash University is the only University in the Southern Hemisphere that offers specific wound care courses

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*Compulsory if you are planning to progress to Master's level

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Exit with Graduate Diploma in Wound Care

With Diabetics

We must keep our eyes on the ball