

# The Complete Guide to Medically Designed Very Low Calorie Meal Programs and Metabolism Reset in Australia

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## Details:

I'll research the latest authoritative data to ensure the pillar page contains current, cross-cutting evidence beyond what the cluster articles already cover. I now have comprehensive research to write the definitive pillar page. Let me compile this authoritative resource.

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### ## Executive Summary

Australia is in the midst of an obesity and metabolic health crisis of historic proportions. Two in three Australian adults have overweight or obesity — drivers of insulin resistance, cardiovascular disease, type 2 diabetes, and fatty liver disease that collectively cost the health system billions of dollars each year. For the millions of Australians living with these conditions, medically designed very low calorie diet (VLCD) programs represent one of the most clinically powerful, evidence-rich, and underutilised non-surgical interventions available.

Yet the landscape is profoundly confusing. Pharmacy shelves carry dozens of products labelled "VLCD" that differ enormously in clinical formulation, nutritional completeness, and regulatory status. The term "metabolism reset" is simultaneously a marketing slogan and a clinically meaningful description of measurable physiological change. And the difference between a genuinely medically designed program and a self-initiated shake protocol is not merely cosmetic — it is the difference between a supervised clinical intervention and an unsupported, potentially risky experiment.

This guide synthesises the complete body of evidence across every dimension of medically designed VLCD programs in Australia: the science of what a VLCD is and how it works; the metabolic mechanisms of a genuine reset; who is eligible and who is not; how programs are structured across their three phases; what results to expect at 7, 14, and 28 days; how VLCDs address type 2 diabetes, metabolic syndrome, and pre-surgical liver reduction; and how professional support — from GPs and Accredited Practising Dietitians — is the single most powerful determinant of whether a program succeeds or fails.

This is the resource that answers every question — and connects every dot.

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### ## What Is a Medically Designed VLCD? Definitions, Thresholds, and the Distinction That Matters

#### ### The Clinical Definition

A very low calorie diet (VLCD) has a specific, internationally recognised clinical meaning that is distinct from simply "eating less." Very-low-calorie diets are diets of 800 kilocalories (3,300 kJ) or less energy intake per day, whereas low-calorie diets (LCDs) are between 1,000 and 1,200 kcal per day. In the

Australian clinical context, the term "very low energy diet" (VLED) is used interchangeably with VLCD — both refer to the same category of dietary intervention.

This threshold is not arbitrary. Below 800 kcal per day, the body undergoes a distinct metabolic shift — from glucose dependence to fat oxidation and mild nutritional ketosis — that does not occur at higher calorie levels. This shift is the physiological foundation of the "metabolism reset" concept, and it requires nutritional safeguards that standard diets do not need. (See our detailed guide on *\*What Is a Very Low Calorie Diet? The Science Behind 800-Calorie Meal Programs Explained\** for the full mechanistic breakdown.)

International regulatory bodies reinforce this hierarchy. Medical nutrition therapy (MNT) is an important component of obesity treatment, and low-calorie diets (LCDs) and very-low-calorie diets (VLCDs) are part of the MNT toolbox.

### ### What "Medically Designed" Actually Means

The phrase "medically designed" has a specific and meaningful definition when applied to a genuine VLCD program. It refers to a program in which:

1. **Clinical formulation** is developed by qualified health professionals — medical doctors, dietitians, or both — based on established nutritional science
2. **Individual clinical assessment** occurs before the program commences, accounting for the person's medical history, medications, comorbidities, and metabolic profile
3. **Ongoing professional supervision** is built into the program structure, not offered as an optional add-on
4. **Nutritional completeness** is verified against recognised benchmarks, not simply claimed

In Australia, the regulatory landscape governing these products is layered. VLEDs regulated within Standard 2.9.5 — Food for Special Medical Purposes in the Australia New Zealand Food Standards Code — carry stricter compositional requirements than the Standard 2.9.3 framework governing ordinary meal replacement products. Critically, there may be considerable variability in the nutritional content of VLED products available, as the nutritional content of VLEDs is currently unregulated, and VLEDs are explicitly excluded from two of the most relevant standards of the FSANZ code. This regulatory gap means a product labelled "VLCD" on an Australian pharmacy shelf may not be subject to the same compositional scrutiny as a program developed and delivered under medical supervision. (See our detailed guide on *\*How Medically Designed VLCD Programs Differ from DIY Diets and Meal Replacement Shakes in Australia\** for a full breakdown of this three-tier landscape.)

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## ## The Science of Metabolism Reset: What Actually Changes in Your Body

### ### Metabolic Inflexibility: The Problem a VLCD Solves

To understand what a metabolism reset achieves, you first need to understand what has been lost. Metabolic flexibility — the body's ability to efficiently switch between burning glucose and burning fat as fuel — erodes progressively in the context of chronic overnutrition, weight gain, and insulin resistance. Metabolic flexibility is proposed to be impaired in obesity and chronic diseases such as type 2 diabetes mellitus, cardiovascular diseases, and metabolic syndrome, and is now considered a key determinant of cardiometabolic health.

When metabolic flexibility is lost — a state termed *\*metabolic inflexibility\** — the body struggles to switch between fuel sources. Insulin signalling becomes blunted, fat oxidation is suppressed even during fasting, and blood glucose regulation deteriorates. A medically designed VLCD is specifically designed to interrupt this cycle through five interconnected mechanisms.

### ### The Five Mechanisms of a VLCD Metabolism Reset

**\*\*1. Induction of Nutritional Ketosis.\*\*** When daily carbohydrate intake drops below 50 grams under VLCD conditions, the liver converts stored fat into ketone bodies (primarily beta-hydroxybutyrate) that serve as the primary fuel source for the brain and muscles. This is not the dangerous ketoacidosis associated with uncontrolled Type 1 diabetes — it is a controlled, mild state that forces the body to draw on stored adipose tissue, particularly visceral fat, as its primary energy substrate.

**\*\*2. Restoration of Insulin Sensitivity.\*\*** This is arguably the most clinically important outcome of a VLCD-induced metabolism reset. Evidence from clinical studies and meta-analyses suggests that VLCD can decrease body weight, improve metabolic parameters, insulin resistance/sensitivity, and nonalcoholic fatty liver disease (NAFLD). The speed of this improvement is particularly striking: after just one week of VLCD at 800 kcal/day, despite only modest weight loss, significant drops occur in liver fat and insulin resistance (HOMA-IR) by 14–50%.

**\*\*3. Blood Glucose Stabilisation.\*\*** VLCDs produce rapid improvements in glycaemic control, with these metabolic benefits appearing within the first 2–4 weeks of treatment. A 2024 systematic review and meta-analysis of 29 clinical trials confirmed significant reductions in fasting blood sugar, HbA1c, and HOMA-IR in patients with Type 2 diabetes following a VLCD protocol.

**\*\*4. Lipid Profile Remodelling.\*\*** Total and LDL cholesterol and triglycerides are significantly reduced by VLCD, along with a significant HDL cholesterol increase. The triglyceride reduction is particularly robust and dose-dependent — research has found that the pattern of change is linear with an increasing energy deficit, with no evidence of plateauing.

**\*\*5. Visceral and Hepatic Fat Reduction.\*\*** In a randomised clinical trial, VLCD participants experienced approximately 3-fold greater loss in visceral adipose tissue (VAT) compared to a low-fat diet group (–22.8% vs –1.0%). This preferential mobilisation of visceral fat — the metabolically active fat stored around abdominal organs — is not incidental. It is a direct consequence of the deep energy deficit and resulting ketosis, and it is the primary mechanism through which a VLCD dismantles the metabolic syndrome cluster.

(See our detailed guide on *\*What Is a Metabolism Reset and How Does a VLCD Achieve It?\** for a full mechanistic exploration of each pathway.)

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## ## Who Is Eligible — and Who Is Not: A Clinical Framework for Australians

### ### Primary Eligibility Criteria

A medically designed VLCD program is a clinical intervention, not a lifestyle choice. Eligibility is determined not by motivation alone, but by a comprehensive assessment of BMI, comorbidity profile, medication status, and psychological history.

VLCDs can be recommended in patients between 18 and 65 years old with a BMI above 30 kg/m<sup>2</sup>, who have previously failed under a low-calorie diet, and remain motivated to ensure compliance. In clinical trial frameworks, overweight individuals (BMI 25.0–29.9 kg/m<sup>2</sup>) with a comorbidity such as metabolic-associated steatotic liver disease (MASLD) are also recognised as eligible candidates.

**\*\*Comorbidities that make a VLCD particularly indicated:\*\***

- **\*\*Metabolic syndrome:\*\*** In clinical practice, short-term very low-calorie diets have been established as an effective intervention for improving metabolic syndrome, even in the absence of exercise.
- **\*\*Type 2 diabetes and prediabetes:\*\*** There is evidence that the reversibility of type 2 diabetes is achievable using very low calorie diets or carbohydrate restriction diets.
- **\*\*Non-alcoholic fatty liver disease (NAFLD/MASLD):\*\*** VLCD offers a feasible treatment option for patients with NAFLD to enable a sustainable ≥10% weight loss, which can improve liver health, cardiovascular risk, and quality of life.
- **\*\*Pre-surgical liver reduction:\*\*** One of the most clinically well-established indications for a VLCD in

Australia is pre-operative liver volume reduction prior to bariatric and other abdominal surgeries.

### ### Absolute Contraindications

Absolute contraindications include: type 1 diabetes mellitus, latent autoimmune diabetes in adults (LADA), beta-cell failure in type 2 diabetes mellitus, use of SGLT2 inhibitors (due to the risk of euglycaemic diabetic ketoacidosis), pregnancy, breastfeeding, kidney failure, severe liver disease, porphyria, and active eating disorders.

### ### Relative Contraindications

Relative contraindications include moderate or severe kidney failure; cardiovascular diseases such as heart failure (NYHA Class III–IV), unstable angina, acute coronary syndrome or stroke within the past 12 months; liver diseases including Child-Pugh C classification; psychiatric comorbidities and substance dependence; and current insulin therapy in T2DM.

The clinical complexity of this eligibility assessment — spanning BMI, comorbidity profile, medication interactions, organ function, and psychological history — makes self-initiation without professional oversight a genuine clinical risk. (See our detailed guide on *\*Who Is a Medically Designed VLCD Program Suitable For? Eligibility, Contraindications, and Medical Screening in Australia\** for the complete clinical framework.)

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## ## The Three-Phase Architecture: From Intensive Reset to Lifelong Maintenance

One of the most consequential misunderstandings about VLCD programs is treating them as a single-phase intervention. Medically designed programs are structured in three distinct phases, each with its own physiological logic, clinical risks, and evidence-based protocols. Understanding all three — and their interconnection — is what separates programs that produce durable results from those that produce temporary ones.

### ### Phase 1: The Intensive Reset (Weeks 1–12)

The Intensive Phase is the core VLCD period, during which caloric intake is restricted to below 800 kcal per day. Weight loss with VLCDs typically averages 1.5 kg per week, resulting in a total loss of around 20 kg after 12–16 weeks. During this phase, the body transitions into mild nutritional ketosis, drawing on stored fat as its primary fuel source.

**\*\*Protein requirements are non-negotiable.\*\*** VLCDs should provide at least 0.8 g protein per kilogram of ideal bodyweight per day to preserve lean body mass, along with the recommended daily allowances of minerals, vitamins, trace elements, and essential fatty acids. Research has found that the control group (without resistance exercise training) lost  $4.6 \pm 0.8$  kg of lean mass during a VLCD, while the resistance exercise training group had no changes — demonstrating that resistance training positively affected body composition by preserving lean mass without compromising overall fat loss.

**\*\*What to expect at each time point:\*\*** - **\*\*Day 7:\*\*** Glycogen depletion produces rapid fluid loss; meaningful metabolic improvements (insulin sensitivity, hepatic glucose production) begin within the first week, independent of total weight lost - **\*\*Day 14:\*\*** Fat oxidation dominates; blood pressure, triglycerides, and blood glucose show measurable improvement; gut microbiome beta-diversity begins to shift - **\*\*Day 28:\*\*** Comprehensive metabolic reset measurable across all major biomarkers — HOMA-IR, hsCRP, plasma adiponectin, lipid profile, and visceral fat area

(See our detailed guides on *\*VLCD Metabolism Reset Results: What Australians Can Realistically Expect in 7, 14, and 28 Days\** and *\*VLCD Side Effects, Hunger Management, and How to Overcome the First Two Weeks of a Metabolism Reset\** for complete timelines and management strategies.)

### ### Phase 2: The Transition Phase — The Highest-Risk Window

The Transition Phase is the most clinically underappreciated stage of any VLCD program. During the Intensive Phase, the body undergoes measurable metabolic adaptation — resting metabolic rate drops, and hunger hormones shift. Increasing evidence indicates that physiological changes occur after diet-induced weight loss, including decreased levels of leptin and increased levels of ghrelin — many of which would be expected to reduce satiety and increase hunger, possibly contributing to the weight regain frequently seen after weight loss.

Clinically designed transition protocols reintroduce whole food in a graduated, stepwise manner over four weeks, moving from VLCD formulas to a full-food plan. In European VLCD ketogenic diet protocols, the transition structure implements a progressive increase in daily kilocalories over three two-week periods — from 1,000 kcal to 1,200 kcal to 1,400–1,800 kcal based on a Mediterranean diet framework.

The typical weight loss/weight regain pattern in studies employing VLCD was a weight loss of 15%–25% in the initial 3–4 months and weight regain of 40%–50% of the lost weight in the 1–2 years after the study. The transition phase is the first — and most critical — line of defence against this outcome.

### ### Phase 3: Long-Term Maintenance — A Structured Clinical Phase, Not an Afterthought

Long-term maintenance is not simply "eating normally again." It is a structured, evidence-informed eating pattern that must account for the body's altered metabolic set-point, hormonal environment, and behavioural tendencies following significant weight loss.

The most evidence-supported maintenance diet following a VLCD is a lower-carbohydrate Mediterranean-style eating pattern. Research published in *Antioxidants* (Verde et al., 2022) found that women with high adherence to the Mediterranean diet after a VLCD achieved the best results in terms of weight loss and improved body composition. Research published in *ScienceDirect* confirms that among dietary strategies, the Mediterranean diet provides sustainable benefits, while more intensive interventions such as low-energy diets and ketogenic diets can induce rapid and clinically meaningful improvements.

Emerging evidence supports the use of short VLCD cycles — typically two weeks per quarter — to prevent the gradual metabolic drift that leads to weight regain. This study provides real-world evidence that regular VLCD users had greater success and weight loss than intermittent program users.

(See our detailed guide on *VLCD Program Phases Explained: Intensive Reset, Transition, and Long-Term Weight Maintenance* for the complete phase-by-phase evidence base.)

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## ## VLCD Programs and Type 2 Diabetes: The Remission Evidence

### ### The DiRECT and DiRECT-Aus Evidence

The most important clinical development in the VLCD field over the past decade is the robust evidence that medically designed programs can achieve full remission of type 2 diabetes — not just improvement, but remission defined as HbA1c < 6.5% and cessation of all glucose-lowering medications for at least two months.

The original DiRECT trial, using a total diet replacement of 825–853 kcal/day, demonstrated that 46% of people with type 2 diabetes who received the weight management programme were in remission one year later, and 36% at two years, compared to only 4% in the control group.

Critically, this evidence translates directly to the Australian clinical context. At 12 months, T2D remission occurred in 86 (56%) of 155 participants in the ITT population. The number of participants achieving T2D remission was highest after completion of the total diet replacement phase, with remission in 102 (66%) of 155 participants. This was the DiRECT-Aus trial, an open-label single-arm

intervention trial conducted across 25 primary care practices in New South Wales, Australia.

The DiRECT-Aus trial confirms that an intensive lifestyle intervention (very low energy diet) delivered in an Australian primary care setting to individuals with recently diagnosed type 2 diabetes results in remission for one in two participants.

### ### The Biological Window of Opportunity

Duration of diabetes is a critical determinant of remission probability. Responders to weight loss programs had a shorter duration of diabetes — 2.7 years versus 3.8 years on average — with 60% remission observed in participants with diabetes duration of less than four years, compared with 21% in those with duration of more than eight years.

This creates a clinically actionable message for Australian GPs: the window for VLCD-mediated remission is widest in the first four years after diagnosis. Early referral to a medically designed VLCD program is not a last resort — it is a front-line therapeutic option.

### ### The Medication Safety Imperative

When a person with T2D commences a VLCD, blood glucose can drop rapidly and significantly within the first 24–72 hours. If they are simultaneously taking glucose-lowering medications — particularly insulin, sulphonylureas (e.g., gliclazide), or SGLT2 inhibitors — the combined effect creates a serious and potentially dangerous risk of hypoglycaemia. VLCD in people with T2D was associated with significant weight loss, reduction in blood glucose profile and improvement in cardiovascular risk profile, high tolerability and good safety outcomes — but only when managed with appropriate clinical oversight.

This is precisely why medically designed programs — formulated and supervised by GPs and dietitians — are fundamentally different from self-initiated VLCD shakes purchased over the counter. (See our detailed guide on *\*Medically Designed VLCD Programs and Type 2 Diabetes: Can a Metabolism Reset Improve or Reverse Blood Sugar Control?\** for the complete medication adjustment protocol.)

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### ## VLCD and Metabolic Syndrome: Targeting the Full Cardiovascular Risk Cluster

More than 35% of Australian adults have metabolic syndrome — a convergent cluster of elevated triglycerides, low HDL cholesterol, high blood pressure, excess visceral fat, and elevated fasting glucose that together dramatically increase the risk of heart attack, stroke, and progressive liver disease.

A medically designed VLCD is one of the most clinically compelling tools for targeting this cluster simultaneously, and the speed at which markers shift is remarkable.

### ### Visceral Fat: The Primary Target

Visceral adipose tissue (VAT) — the metabolically active fat stored around the abdominal organs — is the central driver of metabolic syndrome pathology. In clinical trials, VLCD participants experienced approximately 3-fold greater loss in visceral adipose tissue compared to low-fat diet participants (–22.8% vs –1.0%). This preferential mobilisation of visceral fat is a direct consequence of the metabolic state induced by a VLCD.

### ### Triglycerides: The Fastest Marker to Respond

Of all the metabolic syndrome components, serum triglycerides are typically the first to respond to caloric restriction and carbohydrate reduction. Prospective studies indicate that VLCDs improve the lipoprotein profile independently of weight loss — consistently improving postabsorptive and postprandial triglycerides, HDL cholesterol, and the distribution of LDL-C subfractions to a greater extent than low-fat diets.

### ### Blood Pressure: Significant Reductions Within Days

In a landmark 2025 clinical study published in *Frontiers in Endocrinology*, 18 adult patients meeting the diagnostic criteria for metabolic syndrome were placed on a 9-day VLCD regimen. Following the short-term VLCD intervention, patients exhibited significant reductions in body weight, waist circumference, and BMI, along with significantly lowered blood pressure. The study concluded that a short-term VLCD is an effective and safe intervention for improving anthropometric parameters, blood pressure, and lipid metabolism in patients with metabolic syndrome.

### ### NAFLD/MASLD: A Critical but Overlooked Metabolic Syndrome Component

Non-alcoholic fatty liver disease (NAFLD) is now considered both a consequence and a driver of metabolic syndrome. After just 1 week of VLCD, despite only modest weight loss, significant drops occur in liver fat and insulin resistance. Over longer periods, a relative loss of 7–10% body weight improved NAFLD activity score in 88–100% of patients and resolved steatohepatitis in 84–90% of patients in a prospective study of 293 patients with paired liver biopsies.

(See our detailed guide on *VLCD and Metabolic Syndrome in Australia: How Low-Calorie Meal Programs Target Cholesterol, Blood Pressure, and Visceral Fat* for the complete cardiovascular evidence base.)

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## ## Comparing Program Types: Real Food vs. Shake-Based vs. Doctor-Prescribed

### ### The Three-Category Landscape

The Australian VLCD market spans three meaningfully different program architectures that differ substantially in clinical formulation, nutritional completeness, medical oversight, and suitability for specific health goals.

**\*\*Shake-Based, Pharmacy-Accessible Programs:\*\*** The major shake-based VLCD brands available in Australia include KicStart™ VLCD, Optislim® VLCD, Optifast® VLCD, Tony Ferguson® VLCD, Dr. MacLeod's® VLED, Cambridge® Weight Plan, and Medical Vita Diet. These products are characterised by convenience and broad retail accessibility. VLEDs are very well-studied, having been used in clinical settings for more than 40 years. However, significant variability exists in nutritional content — research from the University of Sydney's Boden Institute found that even brands with the highest daily protein content only met the estimated protein requirements of the smallest and youngest women for whom a VLED would be indicated.

**\*\*Real-Food VLCD Delivery Programs:\*\*** The landmark Deakin University MicroFit Study — a single-blind, two-arm, randomised controlled-feeding trial — provided the first head-to-head comparison of food-based versus supplement-based VLEDs. The food-based VLED comprised pre-packaged meals with approximately 93% whole-food ingredients, while the supplement-based VLED comprised shakes, soups, bars, and desserts with approximately 70% industrial ingredients. The conclusion was unambiguous: a food-based VLED increases gut microbiome diversity more than a supplement-based VLED. Furthermore, even though total weight lost was similar, the whole-food group lost significantly more body fat and better preserved lean muscle mass compared to the supplement group.

**\*\*Doctor-Prescribed and Dietitian-Supervised Programs:\*\*** Programs embedded within a formal clinical framework — where GP or dietitian assessment, biometric screening, and ongoing monitoring are built into the program design — represent the gold standard. Total diet replacement of 825-853 kcal/day using meal replacements was implemented for 12 weeks, followed by an ongoing structured program until 52 weeks, with regular follow-up with a general practitioner, dietitian, and/or practice nurse. Of 39 recruited participants, 32 (82.1%) and 27 (69.2%) completed 12 weeks and 52 weeks of the structured program, respectively. Decrease in weight by -12.0 kg and decrease in glycated haemoglobin (HbA1c)

by -1.1% were observed at 12 weeks.

### ### The GLP-1 Landscape: Where VLCDs and Pharmacotherapy Intersect

A critical cross-cutting question for 2025 and beyond is how medically designed VLCD programs relate to the rapidly expanding GLP-1 receptor agonist (GLP-1 RA) landscape. A 2024 systematic review examining the use of GLP-1 RAs for obesity in non-diabetic populations found significant reductions in weight (mean difference,  $-8.77$  kg) and improvements in cardiovascular risk factors such as lipid profiles and blood pressure. However, GLP-1 RAs are expensive and may increase health inequity with access limited to those self-funding or those with insurance coverage.

This creates a clinically important complementary relationship. A medically designed VLCD program achieves metabolic improvements through dietary means — at a fraction of the cost of GLP-1 RA therapy — and can serve as either a standalone intervention for eligible patients or a foundation that enhances the efficacy of pharmacotherapy for those who require it. A 2024 clinical trial published in *Clinical Nutrition* examined the metabolic effects of VLCD, semaglutide, and combination therapy in individuals with type 2 diabetes, confirming that each approach targets overlapping but distinct metabolic pathways. The combination of dietary and pharmacological intervention represents an emerging frontier in Australian metabolic medicine — one that makes the foundational understanding of VLCD programs more, not less, important.

(See our detailed guide on *Comparing Australia's Leading Medically Designed VLCD and Metabolism Reset Programs* for a full head-to-head evaluation.)

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### ## The Role of Professional Support: Australia's Most Underutilised Outcome Driver

#### ### The Real-World Evidence Gap

Most Australians who begin a VLCD program do so alone. Very low-calorie diet (VLCD) programs are readily available in Australia. However, there is a lack of real-world evidence describing the characteristics related to positive outcomes. This self-initiation norm has profound consequences for outcomes.

#### ### The Dietitian Effect: A 6.5x Odds Ratio

The most striking finding from the Jones et al. (2024) *Obesity Science & Practice* study — the most comprehensive Australian real-world evidence on this question — concerns the specific role of dietitian support. In intermittent users, program success was greater when dietitian support was used, with an odds ratio of 6.50. An odds ratio of 6.50 means that an intermittent VLCD user who engages with a dietitian is more than six times as likely to report program success than one who does not. Compared to regular users, intermittent users reported lower percentage weight loss ( $15.1\% \pm$  SD 9.8 vs.  $9.9\% \pm$  SD 6.8, relative to starting weight).

#### ### Dietitian-Led Models in Australian Hospitals

The most controlled Australian evidence for dietitian-led VLCD programs comes from the clinical preoperative setting. The Griffin et al. (2021) study, evaluating a dietitian-led VLCD clinic at Logan Hospital in Queensland over 23 months, found that a dietitian-led VLCD-based model achieved sufficient weight loss to facilitate elective surgery for most patients. The approach was feasible, highly valued by patients and surgeons, and resulted in perceived surgical benefits. Surgeons reported VLCD-based treatment made operations easier (83%) and shorter (75%), and all recommended the model of care. A subsequent pilot RCT by Griffin et al. (2024), published in the *British Journal of Nutrition*, further reinforced this model.

#### ### Medicare Access: Making Professional Support Affordable

For Australians with a chronic medical condition, the cost barrier to dietitian support is meaningfully reduced through the Medicare Chronic Disease Management Plan. With a GP referral under a Chronic Condition Management Plan, eligible Australians may access up to 5 rebated dietitian appointments per calendar year, with a rebate currently of \$61.80 per appointment. For VLCD candidates with obesity plus a comorbidity — which describes the majority of people who are clinically indicated for a medically designed program — this pathway is available and should be actively pursued.

(See our detailed guides on *\*The Role of Dietitian and GP Support in VLCD Program Success: What Australian Research Shows\** and *\*How to Start a Medically Designed VLCD Metabolism Reset Program: A Step-by-Step Guide for Australians\** for the complete clinical and practical framework.)

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## ## Pre-Surgical VLCD: The Liver Reduction Imperative

### ### Why the Liver Is the Central Surgical Problem

In patients with obesity — particularly those with metabolic syndrome or NAFLD — the liver is frequently enlarged and infiltrated with fat. VLCDs have been commonly implemented prior to metabolic and bariatric surgery with the goal of shrinking left liver lobe size and reducing intra-abdominal mesenteric fat. The left lobe of the liver lies directly over the stomach and must be retracted during laparoscopic procedures. A fatty, enlarged liver is not only difficult to retract — it is fragile, bleeds more readily, and reduces the surgeon's working space and visibility.

### ### The Evidence for Liver Volume Reduction

The evidence base for VLCD-induced liver reduction is substantial. VLCD treatment led to weight loss of  $-2.8$  to  $-14.8$  kg and to liver size reduction by 5% to 20% of the initial volume. A 2022 prospective randomised trial provided particularly precise data: both VLCD strategies led to a mean weight reduction of 5.24 kg and liver volume was reduced by 397 ml, corresponding to 14.6% — achieved over just two weeks.

A 2025 systematic review and meta-analysis aimed to evaluate the efficacy and safety of preoperative dietary interventions, including low-calorie diets (LCDs) and very low-calorie diets (VLCDs), commonly implemented in metabolic and bariatric surgery. The findings confirm that preoperative VLCDs for bariatric surgery are well established and associated with benefits such as decreased visceral fat, surgeon-perceived difficulty, and operative time.

### ### Optimal Duration: The 2–4 Week Evidence

VLCD benefits were shown to be maximised in the 2- to 4-week timeframe. Critically, VLCDs of more than 4 weeks showed greater median muscle mass loss (26.9% vs 8.8%) — meaning excessive restriction risks the very lean mass needed for surgical recovery. This finding has direct implications for pre-surgical VLCD design: the goal is rapid fat and liver volume reduction, not prolonged catabolism.

In 2021/22, 179.6 bariatric procedures per 100,000 population were performed in NSW — an 89.7% increase since 2013/14. With procedure volumes at this scale and rising, optimising each patient's pre-operative status through a structured, dietitian-supervised VLCD is a meaningful lever for reducing system-wide surgical risk.

(See our detailed guide on *\*VLCD Metabolism Reset for Pre-Surgical Weight Loss in Australia: Liver Reduction, Bariatric Preparation, and Clinical Outcomes\** for the complete surgical evidence base.)

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## ## The Seasonal Quarterly Reset: A Long-Term Metabolic Maintenance Strategy

### ### Why Long-Term VLCD Maintenance Remains the Unsolved Problem

The clinical record on VLCD outcomes is unambiguous on one point: initial results are impressive, but sustaining them is the real challenge. Nine randomised control trials including VLCD treatment with long-term weight maintenance show a large variation in the initial weight loss regain percentage, ranging from -7% to 122% at the one-year follow-up to 26% to 121% at the five-year follow-up. This variance is not random — it reflects whether or not an active, structured follow-up strategy was in place.

### ### The Australian Weight Gain Calendar

A landmark 2023 cohort study published in *\*JAMA Network Open\**, led by Carol Maher and colleagues at the University of South Australia, examined weight patterns across a full year in 368 Australian adults. In this cohort study, weight fluctuated by 0.3% each week, with participants gaining a median 0.26% body weight over 12 months. Participant weight increased sharply at Christmas/New Year and Easter, was heaviest in summer, and was lightest in autumn. The study found that the Christmas/New Year period and winter were key periods for weight gain, suggesting that weight gain prevention interventions targeting these times of the year may be warranted.

This data reframes the seasonal reset strategy from a theoretical concept to a practical response to a documented biological and behavioural reality. If Australian adults are most likely to accumulate metabolic burden at Christmas/New Year, Easter, and mid-winter, then placing reset cycles strategically after these periods is not arbitrary — it is a targeted, evidence-aligned intervention.

### ### The Metabolic Case for Quarterly Cycles

A 2025 study published in *\*Frontiers in Endocrinology\** examining patients with metabolic syndrome found that pathway analysis indicated that short-term VLCD modulated key metabolic pathways involved in energy and lipid metabolism, insulin sensitivity, anti-inflammatory and antioxidant responses, cellular signalling, and neurohormonal regulation. These improvements are time-limited without reinforcement. A quarterly reset cycle functions as a metabolic "recalibration" — re-inducing the physiological state that produced those improvements before the drift becomes clinically significant.

### ### The Four-Quarter Reset Calendar for Australians

| Quarter | Timing | Trigger Event | Reset Window | |---|---|---|---| | Q1 | Late January | Post-Christmas/New Year accumulation | Late January – early February | | Q2 | April–May | Post-Easter, entering cooler months | Mid-April – early May | | Q3 | July–August | Mid-winter weight gain period | Late July – early August | | Q4 | November | Pre-summer, before holiday season | Early–mid November |

Each two-week reset cycle follows the same evidence-based structure: transition into ketosis (Days 1–3), full VLCD phase at 800–900 kcal/day (Days 4–10), and consolidation with transition preparation (Days 11–14), followed by return to a low-carbohydrate Mediterranean maintenance pattern.

(See our detailed guide on *\*Seasonal Metabolism Reset: How to Use a VLCD Program Quarterly to Sustain Long-Term Weight and Metabolic Health\** for the complete protocol.)

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## ## Managing Side Effects and the First Two Weeks: What the Evidence Says

The first two weeks of a medically designed VLCD are simultaneously the most physiologically demanding and the most clinically significant. Research tracking over 4,000 patients on a VLCD program found that 25% were unable to adapt, dropping out within the first three weeks. Yet those who push through this adaptation window unlock the metabolic benefits the program is designed to deliver.

### ### The Complete Side Effect Profile

VLCDs are generally considered safe, with only minor, transient side effects observed. These side effects are a result of the rapid weight loss and ketosis and are generally insufficient in magnitude or

duration to warrant cessation of the programme — but should be made apparent to the patient prior to commencement.

**\*\*Fatigue (Days 1–5):\*\*** In the first 3 to 5 days of commencing a VLCD program, there may be transient side effects such as fatigue, hunger, lack of concentration, nausea, and headaches. Usually mild ketosis occurs, and most of these symptoms will pass by Day 4 to 6.

**\*\*Headaches (Days 1–4):\*\*** Primarily driven by glycogen depletion and the resulting drop in sodium and potassium levels. Increased water intake (2–2.5 litres daily) and a low-sugar electrolyte supplement are the primary management tools.

**\*\*Lightheadedness and Postural Hypotension (Days 2–7):\*\*** A direct consequence of the diuretic effect of ketosis. Australians on antihypertensive medications should have their doses reviewed by their GP before commencing a VLCD.

**\*\*Constipation (Days 3–14):\*\*** Common causes include a change in diet, insufficient fibre, and inadequate fluids. Fibre supplements may be helpful for some people to boost daily fibre. Real-food VLCD programs generally carry lower constipation risk than shake-only protocols due to their natural fibre content.

### ### The Hunger Paradox: Why Appetite Drops on a Sub-800-Calorie Diet

One of the most counterintuitive aspects of a well-formulated VLCD is that hunger — intense in the first 2–3 days — typically diminishes significantly by Days 3–4, often to levels lower than participants experienced on their pre-program diet. Ketosis helps to suppress appetite, and this effect usually kicks in 3 days into the VLCD program. The mechanism involves ketone bodies acting directly on hypothalamic appetite centres, blunting the compensatory rise in ghrelin, and stabilising blood glucose to eliminate reactive hypoglycaemia hunger spikes.

The macronutrient composition plays a critical independent role. A meta-analysis of randomised controlled trials found that acute ingestion of protein suppressed appetite as evidenced by decreased sensation of hunger and increased fullness and satiety, while also decreasing ghrelin and increasing CCK and GLP-1 concentrations. A high-protein VLCD achieves GLP-1-mediated satiety endogenously — the same mechanism targeted by GLP-1 receptor agonist medications.

Based on a systematic review, VLCD in medically supervised weight loss programmes did not activate disordered eating behaviours; on the contrary, VLCD interventions were associated with decreased binge eating behaviours. This finding directly addresses one of the most common clinical concerns about VLCD programs and should inform how GPs and dietitians counsel patients.

(See our detailed guide on *\*VLCD Side Effects, Hunger Management, and How to Overcome the First Two Weeks of a Metabolism Reset\** for the complete day-by-day management framework.)

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### ## Frequently Asked Questions

**\*\*Q: Is a VLCD the same as intermittent fasting or a keto diet?\*\***

No. A medically designed VLCD is a distinct clinical intervention that restricts total daily energy intake to below 800 kcal while meeting specific protein, micronutrient, and essential fatty acid requirements. Intermittent fasting restricts *when* you eat, not necessarily how much. A ketogenic diet restricts carbohydrates but does not necessarily restrict total calories. A VLCD can induce mild nutritional ketosis as a consequence of severe carbohydrate and calorie restriction, but it is more tightly regulated and nutritionally formulated than a standard ketogenic approach.

**\*\*Q: How is a medically designed VLCD different from buying Optifast or Optislim at the pharmacy?\*\***

The key differences are clinical formulation, individual assessment, and professional supervision. A medically designed program begins with a GP consultation, baseline blood tests, and medication review — none of which occur when purchasing a shake product over the counter. Research has found that even the highest-protein pharmacy VLCD brands only met the estimated protein requirements of the smallest and youngest women for whom a VLED would be indicated, highlighting why individualised clinical formulation matters. Professional supervision also enables medication adjustment for people with diabetes or hypertension — a critical safety requirement that self-initiated programs cannot provide.

**\*\*Q: Can a VLCD reverse type 2 diabetes?\***

Yes — in the right candidate. The DiRECT-Aus trial, conducted across 25 primary care practices in New South Wales, found that 56% of participants with recently diagnosed type 2 diabetes achieved remission (HbA1c < 6.5% off all diabetes medications) at 12 months following a low-energy total diet replacement program. The window of opportunity is widest in the first four years after diagnosis, and the probability of remission increases with greater weight loss achieved. This is not a guaranteed outcome for every person with T2D, but it is a clinically meaningful and evidence-based possibility that should be discussed with a GP early in the disease course.

**\*\*Q: What are the most important things to do in the first week of a VLCD?\***

Three things matter most: hydration, protein adherence, and electrolyte management. Aim for a minimum of 2 litres of water daily. Consume the full prescribed protein allocation across all meals — skipping meals amplifies fatigue and slows ketosis onset. Use a sugar-free electrolyte supplement containing sodium, potassium, and magnesium to manage headaches and lightheadedness. Avoid intense exercise in the first week; light walking is appropriate. Most side effects resolve by Days 4–6 once mild nutritional ketosis is established.

**\*\*Q: How much weight can I realistically expect to lose in the first month?\***

Weight loss is highly individualised, but clinical evidence provides reliable ranges. Following 7 days of VLCD, research documented small but significant reductions in BMI ( $1.3 \pm 0.5 \text{ kg/m}^2$ ). At 28 days, the landmark Johansson et al. study found a mean weight loss of  $6.9 \pm 1.9 \text{ kg}$  in a four-week VLCD cohort. Higher-BMI individuals (BMI > 35) typically lose more in absolute terms due to greater energy stores and higher resting metabolic rate. Critically, the first week's losses are predominantly water and glycogen — fat loss accelerates from week two onward as ketosis is fully established.

**\*\*Q: Is a VLCD safe if I have metabolic syndrome?\***

Metabolic syndrome is one of the strongest clinical indications for a medically designed VLCD in Australia. In clinical practice, short-term very low-calorie diets have been established as an effective intervention for improving metabolic syndrome, even in the absence of exercise, producing significant reductions in body weight, waist circumference, BMI, blood pressure, and regulation of both glucose and lipid metabolism. However, individuals with metabolic syndrome are often on medications for blood pressure, blood glucose, or lipids — and these medications may require adjustment as metabolic markers improve rapidly. This is why GP supervision is non-negotiable, not optional.

**\*\*Q: How do I use a VLCD program for long-term maintenance, not just a one-off reset?\***

The evidence supports a quarterly two-week reset cycle, aligned with the documented high-risk periods for Australian weight gain (post-Christmas, post-Easter, mid-winter, and pre-summer). Between reset cycles, a low-carbohydrate Mediterranean-style eating pattern provides the most evidence-supported maintenance framework. Research confirms that women with high adherence to the Mediterranean diet after a VLCD achieved the best results in terms of weight loss and improved body composition. Professional support — particularly from a dietitian — is associated with significantly better long-term outcomes; in Australian real-world data, dietitian engagement was associated with a 6.5-fold increase in the odds of program success among intermittent users.

**\*\*Q: What should I do before starting a VLCD program in Australia?\***

The essential pre-program steps are: (1) Book a GP consultation for medical history review, baseline biometrics, and pathology referral (fasting glucose, HbA1c, lipid panel, liver function tests, kidney function, and full blood count); (2) Request a medication review, particularly if you are on antihypertensives, diuretics, or diabetes medications; (3) Ask your GP about establishing a Chronic Disease Management Plan for Medicare-rebated dietitian access; (4) Complete an initial dietitian assessment to establish your individual calorie prescription, program format, and monitoring schedule; and (5) Prepare your home environment by removing high-carbohydrate trigger foods and stocking approved items before Day 1. Attempting a VLCD without these steps — particularly if you have any comorbidity or are on medications — carries real clinical risk.

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## **## Key Takeaways**

**\*\*1. A VLCD is a clinical intervention, not a diet.\*\*** The 800-calorie threshold is not arbitrary — it defines a distinct metabolic state that requires medical-grade nutritional formulation and professional supervision to be both safe and effective.

**\*\*2. The metabolism reset is physiologically real.\*\*** The five mechanisms — nutritional ketosis, insulin sensitivity restoration, blood glucose stabilisation, lipid remodelling, and visceral/hepatic fat reduction — are measurable, evidence-grounded, and begin within days, not weeks.

**\*\*3. Eligibility is not determined by motivation.\*\*** BMI, comorbidity profile, medication status, organ function, and psychological history all determine whether the benefits of a VLCD outweigh the risks for a specific individual. GP and dietitian screening is non-negotiable.

**\*\*4. The three-phase architecture is essential.\*\*** The intensive phase, the transition phase, and the maintenance phase each serve a distinct biological purpose. Programs that treat the end of the intensive phase as the end of the program produce the 40–50% weight regain pattern documented in the literature.

**\*\*5. Type 2 diabetes remission is achievable in Australian primary care.\*\*** The DiRECT-Aus trial confirmed 56% remission rates at 12 months across 25 NSW primary care practices. The window of opportunity is widest in the first four years after diagnosis.

**\*\*6. Professional support is the single most powerful outcome driver.\*\*** Australian real-world data shows a 6.5-fold increase in the odds of program success with dietitian engagement. The best-formulated program in the world delivers inferior results without consistent professional support and program adherence.

**\*\*7. Real food and shake-based programs are not equivalent.\*\*** The Deakin University MicroFit RCT demonstrated superior gut microbiome diversity and better fat-to-muscle loss ratios with whole-food VLEDs compared to supplement-based programs — even when total calorie restriction was identical.

**\*\*8. Quarterly seasonal resets are an evidence-aligned long-term strategy.\*\*** Australian cohort data confirms predictable seasonal weight gain patterns at Christmas, Easter, and winter. Strategic two-week VLCD cycles at these inflection points prevent metabolic drift before it becomes clinically entrenched.

**\*\*9. The GLP-1 era does not replace VLCD programs — it contextualises them.\*\*** As GLP-1 receptor agonists reshape the Australian weight management landscape, medically designed VLCD programs serve as a cost-effective, accessible, and evidence-rich complement — both as standalone interventions and as dietary foundations that may enhance pharmacotherapy outcomes.

**\*\*10.** The pre-surgical application is one of the strongest evidence-based indications. **\*\*** A 2–4 week pre-operative VLCD reduces liver volume by 14–20%, is associated with surgeon-perceived ease of operation, and serves as a behavioural rehearsal for post-surgical dietary patterns — making it a clinical imperative, not an optional preparation.

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## ## Conclusion: The Definitive Case for Medically Designed VLCD Programs in Australia

Australia's obesity and metabolic health crisis will not be solved by any single intervention. But medically designed very low calorie diet programs — properly formulated, clinically supervised, and delivered within a structured three-phase framework — represent one of the most evidence-rich, rapidly effective, and broadly accessible tools available in the Australian health system today.

The evidence is not tentative. Across dozens of randomised controlled trials, systematic reviews, and now Australian-specific real-world data, the clinical case is clear: a medically designed VLCD, delivered with GP and dietitian oversight, achieves rapid and measurable improvements in weight, insulin sensitivity, blood glucose, lipid profile, blood pressure, and visceral fat — with type 2 diabetes remission achievable in more than half of eligible patients within 12 months.

What the evidence also makes clear is that outcomes are not determined by the program alone. They are determined by the quality of clinical formulation, the degree of professional support, the structure of the transition and maintenance phases, and the consistency of long-term engagement. The gap between a self-initiated pharmacy shake and a genuinely medically designed program is not a marketing distinction — it is a clinical one, with measurable consequences for safety and outcomes.

For the millions of Australians living with obesity, metabolic syndrome, type 2 diabetes, or fatty liver disease, the question is not whether a medically designed VLCD program is worth considering. The question is whether the program they choose is genuinely medically designed — and whether they have the professional support to make it work.

This guide exists to help answer both questions with the clarity and authority the evidence demands.

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