METABOLIC SYNDROME

- Risk of a **stroke:** Damaged and weakened blood vessels of the brain, or clots that are formed in the arteries of the brain, obstruct blood flow, potentially causing a stroke.

CHOLESTEROL

Cholesterol is an important waxy substance that originates from the liver and diet in humans and animals, which forms a structural part of many hormones and cells. An excess of bad cholesterol (LDL and triglycerides) and a lack of good cholesterol (HDL) may, however, lead to heart disease in the following ways:

- **Hardening of the arteries:** Too much LDL cholesterol in your body can accumulate in your arteries, clogging them and making them less flexible.
- Increased risk of **heart failure:** Due to the hardened arteries, the heart has to work harder to pump blood through the body.
- **Heart attack:** The build-up of plaque in the coronary arteries can disrupt the flow of oxygen-rich blood to the heart muscle.
- A piece of plaque can also block blood flow to the brain, or dislodge and form a clot, leading to a **stroke.**

IMPACT OF STRESS

- Increased blood sugar levels and insulin resistance
- Weight gain
- An impaired immune system
- Indigestion
- Elevated blood pressure
- Abnormal cholesterol levels

MANAGING METABOLIC SYNDROME

Metabolic Syndrome is managed through targeting the leading causes:

- Appropriate and aggressive therapy is essential for reducing the risk of cardiovascular disease.
- Lifestyle changes should be implemented – exercise, healthy diet, no smoking, low alcohol intake and stress management.
- Prescribed medication should aid in combatting insulin resistance, obesity, hypertension and abnormal cholesterol levels.

Ideally, treatment should address all the components of the syndrome!

Please Note: This is an educational information leaflet only and should not be used for diagnosis. For more information on Metabolic Syndrome, consult your healthcare professional.

References: 1.The Journal of Clinical Endocrinology & Metabolism, Volume 89, Issue 6, 1 June 2004, Pages 2595–2600, Scott M. Grundy, Obesity, Metabolic Syndrome, and Cardiovascular Disease 2.Journal of Cardiology Research and Practice, March 2014, Jaspinder Kaur, A Comprehensive Review on Metabolic Syndrome 3.Journal of Metabolic Syndrome, open access, December 2017, Volume 6, Issue 4, Metabolic Syndrome 4. JRSM Cardiovascular Disease, March 2016, Thang S Han, Mike EJ Lean, A clinical perspective of obesity, metabolic syndrome and cardiovascular disease 5.European Heart Journal Supplements, Volume 7, Issue suppl.D, 1 June 2005, Pages D3–D5, George Alberti, Introduction to the metabolic syndrome 6. Medscape, March 2017, Stanley S Wang, MD, Metabolic Syndrome 7. SA Heart, 2010, Volume 7, Number 3, Martin T, MPE, Cardiovascular disease in South Africa 8. JRSM Cardiovascular Disease, 2016, Thang S Hang and Mike EJ Lean, A clinical perspective of obesity, metabolic syndrome and cardiovascular disease 9. Diabetes Care 2004 Dec; 27(12): 3009-3016, Zachary T. Bloomgarden, MD, Dyslipidemia and the Metabolic Syndrome 10. PLOS One, August 2015, Miroslaw Janczura, Grazyna Bochenek , Roman Nowobilski , Jerzy Dropinski , Katarzyna Kotula-Horowitz , Bartosz Laskowicz , Andrzej Stanisz , Jacek Lelakowski , Teresa Domagala, The Relationship of Metabolic Syndrome with Stress, Coronary Heart Disease and Pulmonary Function - An Occupational Cohort-Based Study 11. Journal of Diabetes Research, 2015, Joseph Fomusi Ndisang, Sharad Rastogi, and Alfredo Vannacci, Insulin Resistance, Type 1 and Type 2 Diabetes, and Related Complications 2015 12. The South African Medical Journal, Vol 102, No 11 (2012), Rajiv Timothy Erasmus, David Jonah Soita, Mogamat Shafick Hassan, Ernesto Blanco-Blanco, Zelda Vergotine, Andre P Kengne, Tandi Edith Matsha, High prevalence of diabetes mellitus and metabolic syndrome in a South African coloured population: Baseline data of a study in Bellville, Cape Town 13. JEMDSA 2017 Volume 22 Number 1 (Supplement 1) Page S1-S196, SEMDSA 2017 Guidelines for the Management of Type 2 diabetes mellitus 14. Cardiovasc J Afr. 2014 Nov-Dec; 25(6): 288–294, YK Seedat, South African hypertension practice guideline 2014

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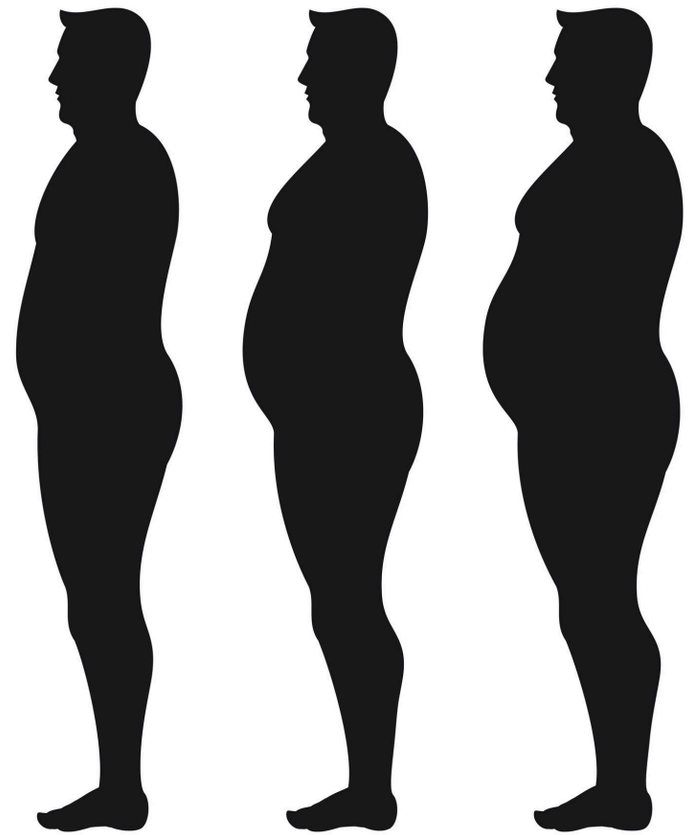

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METABOLIC SYNDROME

WHAT IS METABOLIC SYNDROME?

Metabolic syndrome, otherwise known as syndrome x, occurs when a number of conditions happen simultaneously, increasing your risk of **heart disease, stroke and diabetes.** These are:

- High blood pressure
- High blood sugar levels or insulin resistance
- Body fat accumulating around the waist
- Irregular cholesterol levels

WHY IS METABOLIC SYNDROME DANGEROUS?

According to a recent statement by the World Health Organisation (WHO), heart disease and strokes are identified as leading causes of fatalities in South Africa.

HOW IS METABOLIC SYNDROME DIAGNOSED?

The SEMDSA (Society for Endocrinology, Metabolism and Diabetes of South Africa) 2017 guidelines has outlined the below as indicators of metabolic syndrome:

Component	Measure Categorical cut points
Waist circumference	Men ≥ 102 cm Women ≥ 88 cm
Triglycerides	≥ 1.7mmol/l
HDL Cholesterol	Men < 1.0 mmol/l Women < 1.2 mmol/l
Blood Pressure (BP)	Systolic ≥ 130 mmHg and/or Diastolic ≥ 85 mmHg
Fasting Glucose	≥ 5.6 mmol/l
Diagnosis	Any 3 of the 5 features above Drug treatment specifically targeted at any one of the criteria makes that criterion positive even if the measured variable falls below the cut-off

WHAT ARE THE CONTRIBUTING FACTORS?

- Inactivity
- Obesity
- High intake of sugar and refined carbohydrates
- Stress
- Smoking
- Excessive alcohol consumption

SIGNS AND SYMPTOMS

Metabolic syndrome is a powerful silent killer due to its symptoms often being unnoticeable. When blood sugar levels are very high - increased thirst, the tendency to urinate often and blurred vision can result. The most obvious red flag is a larger waist circumference.

THE HEALTH IMPACTS OF EACH CONDITION

CENTRAL OBESITY

- Obesity is thought to **trigger changes to the chemical processes of the body.** These changes cause fat tissue to release fat molecules into the blood, which can affect the cells that respond to insulin, thereby reducing the body's reaction to insulin **(insulin sensitivity).**
- Studies suggest that abdominal fat prompts the release of chemicals that cause the body to become red, hot, swollen and pain-ridden, which could lead to **lowered insulin sensitivity and eventual resistance.**

INSULIN RESISTANCE

Insulin resistance (IR) occurs when the body's cells do not respond to insulin, which is a hormone that transports glucose from the bloodstream to the cells for energy. Certain levels of insulin are necessary to keep blood sugar levels within the normal range. However, soaring insulin levels may trigger:

- **Weight gain:** The levels of insulin, which is a messenger that instructs the body to store fat, increase dramatically.
- Insulin resistance is the precursor to **type II diabetes**, whereby the beta cells of the pancreas can no longer produce enough insulin to overcome insulin resistance, spiking blood sugar levels.

HYPERTENSION

Classification of Blood Pressure (BP) for adults according to the South African hypertension practice guideline 2014. BP should be categorised into the highest level of BP whether systolic or diastolic.

Stage	Systolic BP (mmHg)	Diastolic BP (mmHg)
Normal	< 120	< 80
Optimal	120-129	80-84
High normal	130-139	85-89
Grade 1	140-159	90-99
Grade 2	160-179	100-109
Grade 3	≥ 180	≥ 110
Isolated systolyc	≥ 140	< 90

The consequences of elevated blood pressure include:

- Risk of **heart disease:** The coronary arteries leading to the heart become progressively narrow from a build-up of plaque (fat, cholesterol and other substances). When the blood flow of the heart muscle is interrupted, it is deprived of oxygen and nutrients, causing a **heart attack.**