

## How Leaky-gut inspired low Cortisol causes a Zenker's Diverticulum—and nasal polyps and proof that:

The serum Cortisol test is, diagnostically, unfit for purpose

The serum Calcium test is, diagnostically, unfit for purpose

The serum Cholesterol test is, diagnostically, unfit for purpose

Blood-pressure tests are, diagnostically, unfit for purpose in the absence of a 24-hour Cortisol saliva test

by Maurice Cotterell

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### The cause of a Zenker's Diverticulum and Nasal Polyps

It has been suggested, by others, that increased pressure during swallowing encourages permanent deformation of esophageal tissue into and through (figure 1.) the transverse fibers of the cricopharyngeus muscle and the oblique fibers of the thyropharyngeus muscle known as the 'Killian Triangle'—resulting in the creation of a Zenker's Diverticulum [ZD]; colloquially known as a 'pharyngeal pouch'. It is, herein, suggested that 'normal' levels of the hormone Cortisol preclude this chain of events.

Many tissue-cells in the body have receptors to Cortisol. A higher level of Cortisol [among many other effects] constricts and 'tightens' cortisol-sensitive tissue, which explains how Cortisol reduces inflammation and regulates blood pressure (Appendix 1.); ['high' Cortisol constricts and narrows arteries, and other tissue, and in so doing increases blood pressure in co-ordination with the blood-pressure-regulation mechanism and serum salt and potassium regulation (via the antidiuretic-hormone Vassopressin and the kidney potassium-filtration-hormone Aldosterone), in conjunction with regulation of water intake via the thirst activation mechanism]. In an engineering sense, it seems likely that the absence of muscle in the Killian Triangle has

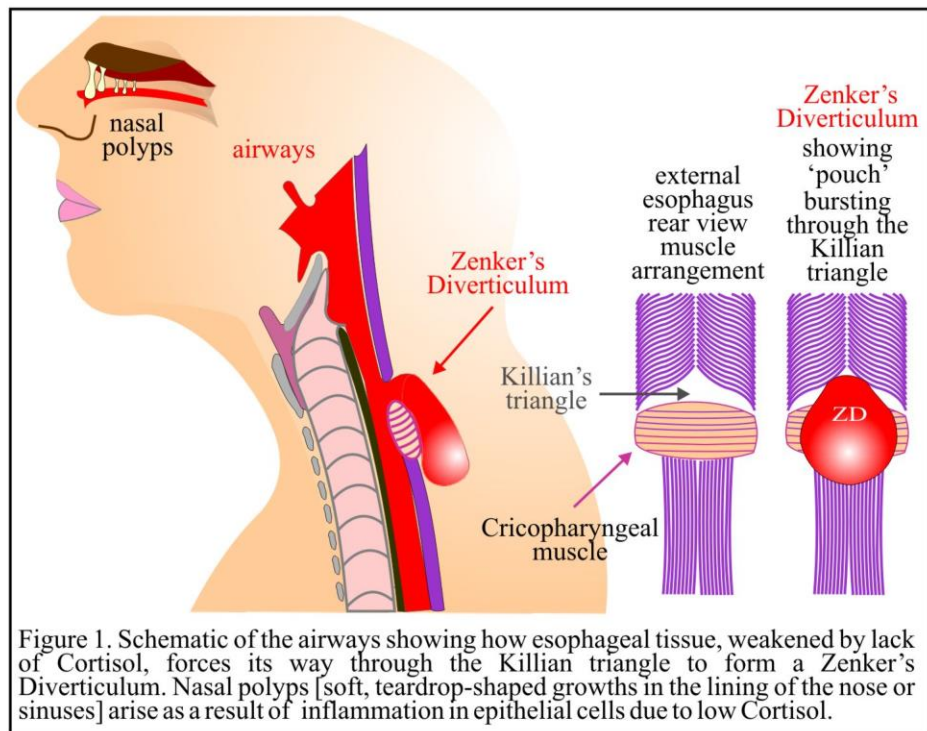


Figure 1. Schematic of the airways showing how esophageal tissue, weakened by lack of Cortisol, forces its way through the Killian triangle to form a Zenker's Diverticulum. Nasal polyps [soft, teardrop-shaped growths in the lining of the nose or sinuses] arise as a result of inflammation in epithelial cells due to low Cortisol.

been deliberately designed, firstly, to allow for the distension (ballooning) of esophageal tissue caused by short-lived increases of pressure experienced inside the esophagus during periods of, for example, choking. Killian's triangle may thus be seen as a 'pressure-relief valve'; one component of an 'anti-choking mechanism'. Observation of the mechanism does not lend to a simultaneous barium swallow and choke experience.

With a 'normal' Cortisol level—this short-lived absorption of pressure would be followed by an increased 'push' from the distended pharyngeal tissue that has previously, momentarily, ballooned into the Killian Triangle—as the tissue inside the esophagus 'springs-back' and returns to a normal position. This would help in either regurgitation *or* successful swallowing of the blockage. The reduced elasticity of esophageal tissue in those with low Cortisol would not 'spring-back' as intended but would remain partially ballooned inside the Killian Triangle. With each episode the situation would worsen until the development of a permanent diverticulum.

### Evidence to support the hypothesis that low Cortisol is the prime mover in both the development of a Zenker's Diverticulum and, also, nasal polyps:

(i) Cortisol supplementation [prednisilone] administered through a nasal inhaler (Avamys), is a known effective treatment in the shrinking of polyps.

(ii) Cortisol [prednisilone] administered through an oral inhaler (Seretide 500—a Cortisol-containing bronchi dilator) shrinks a Zenker's Diverticulum.



(iii) The development of a Zenker's Diverticulum is more prevalent in patients deficient in Vitamin D and Vitamin D regulates Cortisol (figure 2). Low Vitamin D correlates with low Cortisol.

(iv) The development of a Zenker's Diverticulum is more prevalent in patients who are sensitive to Aspirin and Aspirin causes Leaky-gut, which leads to low Cortisol (Appendix 2.).

(v) Nasal polyps are associated with allergies and allergies are caused by Leaky-gut (Appendix 2.).

(vi) Between 6% and 48% of people with Cystic Fibrosis (one of several auto-immune diseases) develop nasal polyps, and auto-immune diseases are caused by Leaky-gut (Appendix 2.) and Leaky-gut causes low-Cortisol.

(vii) Convincing evidence exists—[Cook I.J., Gabb M., Panagopoulos V., et al. Pharyngeal (Zenker's) diverticulum is a disorder of upper esophageal sphincter opening. *Gastroenterology*. 1992;103(4):1229-1235. Doi:10.1016/0016-5085(92)91508-2; Nuño-Guzmán C.M., García-Carrasco D., Haro M., Arróniz-Jáuregui J., Corona J.L., Salcido M. Zenker's Diverticulum: diagnostic approach and surgical management. *Case Rep Gastroenterol*. 2014;8(3):346-352. doi:10.1159/000369130]—demonstrating that patients with a Zenker's Diverticulum have increased resting tone of the cricopharyngeus muscle and that this may be an important initiating factor for its development. It is here suggested that this low resting tone is caused by low Cortisol. An association between, ZD, and hiatal hernia has also been observed. It is highly likely that all of these are caused by low Cortisol.

(viii) The incidence of nasal polyps is higher in those with asthma, and asthma is an auto-immune disease caused by Leaky-gut, and low Cortisol is caused by Leaky-gut (Appendix 2.).

### **The reason 'low' Cortisol has not been previously identified as the cause of Polyps or Zenker's Diverticulum**

One reason why a connection between 'low Cortisol' and 'soft tissue deformation' has never previously been recognised is because serum levels of Cortisol have not been identified as 'low'—because they have been *above* the Irish HSE lower level for serum Cortisol measured as 140nmol/L at 0800hrs.

In November 2016, the U.K. NHS changed the lower level of serum Cortisol by 20%, to 170nmol/L [taken at 0900hrs] saying 'below 170nmol/L is very concerning' [(Appendix 3.): Exeter Clinical Lab. [www.exeterlaboratory.com/test/cortisol/](http://www.exeterlaboratory.com/test/cortisol/)]. In my case, serum Cortisol fell to 164nmol/L.. My GP. refused to investigate saying "your serum Cortisol level is within limits for the Republic of Ireland". As a consequence—and unsurprisingly—I have since developed nasal polyps and a Zenker's Diverticulum.

The NHS report states: '10 – 20% of circulating (serum) Cortisol is loosely attached to albumin and 70 or 80% is bound to transcortin; the remaining 10% is unbound'. It seems that the serum blood test for Cortisol is measuring 'used-up' or 'unavailable Cortisol' as well as the 'active Cortisol' bound to transcortin and in so doing providing misleading results (false negatives). I mentioned this to my G.P. [in 2012]. She ignored my findings. This persuaded me to take the U.K. 24-hour 'Cortisol Saliva Test' (Appendix 4.) which is much more sensitive and accurate than the Cortisol serum test. It shows, categorically that :

'The morning cortisol level is below the normal range'.

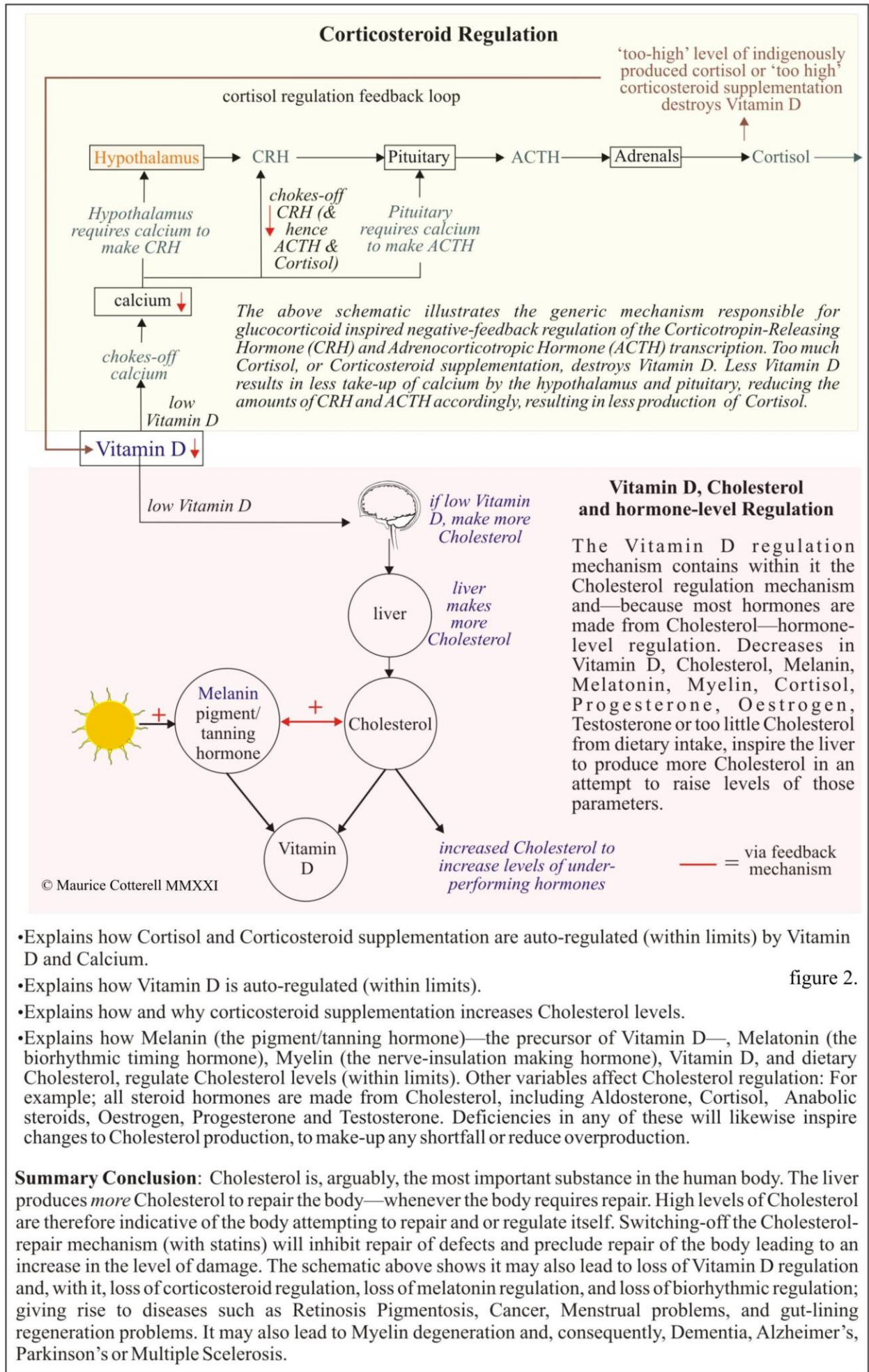
'The noon cortisol level is below the normal range'. And, 'low noon levels suggest a degree of adrenal hypofunction'.

### **Cause of the failure to detect low Cortisol and the resulting epidemic of Leaky-gut**

Appendix 2. shows that Leaky-gut accounts for an estimated 50% of all medical maladies and disease in the West today, and yet the 'medical sector', in Ireland, refuses to acknowledge the disease, the mechanisms at play, or the implications to patient health. If Leaky-gut were recognised it could result in a 50% reduction in health-care costs to Government.

Resistance to the acceptance of any kind of new ideas, or thinking, starts with GPs in the primary care sector who mostly refuse to believe that Leaky-gut exists; preferring instead to believe that patients are 'imagining' their ill-health. As a result, many patients die, suffer unnecessarily or return over and over again to the same GP; or GP after GP, seeking amelioration of their pain and suffering. Because of this, a disproportionate amount of medical resources are spent on a minority of patients who are seen as, at best 'time wasters' and, at worse, 'mentally ill'. If medics restored the health of patients, instead of insisting that there is 'nothing wrong' or 'all of the tests are negative', then they could cut-down the number of patient visits by half. A classic case of 'less haste more speed'. If an Engineer, or any other reasonable professional, was told that 'all tests were normal' the inference would *not* be that 'the fault does not subsist' but, rather, that the tests were either not carried-out correctly, or that the test was inappropriate, or corrupted, or that the 'right tests' have yet to be carried-out'. If the 'fault' was simply to be abandoned, as is done with patient care, then aircraft would routinely fall from the sky, ships would sink, trains would de-rail and buildings would collapse.





- Explains how Cortisol and Corticosteroid supplementation are auto-regulated (within limits) by Vitamin D and Calcium.
- Explains how Vitamin D is auto-regulated (within limits).
- Explains how and why corticosteroid supplementation increases Cholesterol levels.
- Explains how Melanin (the pigment/tanning hormone)—the precursor of Vitamin D—, Melatonin (the biorhythmic timing hormone), Myelin (the nerve-insulation making hormone), Vitamin D, and dietary Cholesterol, regulate Cholesterol levels (within limits). Other variables affect Cholesterol regulation: For example; all steroid hormones are made from Cholesterol, including Aldosterone, Cortisol, Anabolic steroids, Oestrogen, Progesterone and Testosterone. Deficiencies in any of these will likewise inspire changes to Cholesterol production, to make-up any shortfall or reduce overproduction.

figure 2.

**Summary Conclusion:** Cholesterol is, arguably, the most important substance in the human body. The liver produces *more* Cholesterol to repair the body—whenever the body requires repair. High levels of Cholesterol are therefore indicative of the body attempting to repair and or regulate itself. Switching-off the Cholesterol-repair mechanism (with statins) will inhibit repair of defects and preclude repair of the body leading to an increase in the level of damage. The schematic above shows it may also lead to loss of Vitamin D regulation and, with it, loss of corticosteroid regulation, loss of melatonin regulation, and loss of biorhythmic regulation; giving rise to diseases such as Retinosis Pigmentosis, Cancer, Menstrual problems, and gut-lining regeneration problems. It may also lead to Myelin degeneration and, consequently, Dementia, Alzheimer’s, Parkinson’s or Multiple Sclerosis.



## Availability of walk-in medical testing and over-the-counter medication

Presently, the medical sector in Ireland operates as a cartel, one in which the Irish Government is complicit: A patient who needs an Asprin must pay €60 to see a GP to obtain a Prescription and then pay €6 for a pack of 28 Asprin (of which €4 is Government tax). The same pack of Asprin in the U.K. costs £1 over-the-counter. [Asprin-containing products such as *Anadin* can be purchased over the counter but these contain caffeine which destroys Cortisol].

We need to recognise that medication, and other benefits of modern Science, belong to humanity in general and that medications and other benefits should be made readily available to any patient who is willing to pay. Additionally, patients should be able to walk-into any privately-run clinic and obtain any clinical test that is available. This should include X-rays, CT-scans, MRI scans, blood tests etc.. It should be a criminal offence for a physician to refuse medication to a patient who is sick, has requested specific medication, and has been refused the medication; the onus of damage, in such cases, should be placed on the patient, not the physician. These measures would save lives, and reduce costs to health providers and Governments.

If GPs are unwilling to treat a patient for a Condition the GP does not understand then the patient should be given a fair chance of survival through self-treatment; rather than accepting the only remaining option of death. Walk-in clinical testing would also enable patients to take test results direct to a Consultant, precluding the need for referral by a GP; meaning that, in many cases, armed with a portfolio of test results, the Consultant can reduce the number of patient visits by 50%, or only 50% of Consultants would be required. Alternatively, numbers could be retained until the 2–4-year waiting-list is reduced to zero.

Some medics will deny that the situation is so dire, but here is a case-in-point: I once requested antibiotics from a GP who refused to prescribe them on the basis that he believed I did not need them. To settle the matter he suggested I take a blood test. If bacteria were found to be in the blood he would prescribe antibiotics. But this meant waiting 7 days for the result and I knew, from experience, that I would be close to death by that time. I had 6 leftover antibiotic tablets, enough to get me to a pharmacist, in Mexico Airport, where I purchased 7 courses of Amoxicillin (for present and future use) over the counter. When I returned to the GP, 7 days later, he revealed—gleefully—that the blood-test was ‘negative’ and therefore would not prescribe antibiotics. There was no bacteria—in the bloodstream. The question for me was ‘when is an infection not an infection?’. It took me a further 5 years to understand that an ‘overgrowth of gut bacteria (an ‘infection’) produces an overgrowth of deadly endotoxins that, for those with Leaky-gut, leaks into the bloodstream causing intestinal toxemia [blood-poisoning], organ failure and death. Toxins in the blood cannot be detected with a simple blood test. Antibiotics immediately kill gut bacteria; the liver then cleanses the blood of toxins and health is restored within 36 hours. This is why antibiotics work with Leaky-gut. An ‘infection’ need not necessarily be an ‘infection of the blood’ but can still cause death. Why couldn’t the GP figure-out this? How many others have died using such idiotic logic as ‘if there is no infection in the blood then antibiotics cannot work’. When patients have to find ways around irrational logic and argument they will find alternative ways to get what they need to survive. Ignorance in the master begets fraud in the servant.

### Clinical tests not fit for purpose:

**Serum Cortisol:** This investigation shows that the serum Cortisol test is not fit for purpose. The lower limit is at least 20% from where it should be, resulting in false negatives and, hence, cannot be relied upon.

**Serum Cholesterol:** Figure 2. shows how the liver manufactures Cholesterol to increase levels of Vitamin D and most of the hormones. High levels of serum Cholesterol, therefore, indicate that either the diet contains too much Cholesterol and should be reduced *or* that the liver is producing extra Cholesterol in an attempt to heal the body. In such a case, high levels of Cholesterol indicate that the body has entered ‘healing mode’. In this case Cholesterol should, rightly, be seen as the ‘healing molecule’. Switching-off Cholesterol production with Statins will prevent natural healing from taking place causing death to those with Leaky-gut.

**Serum Calcium:** The serum Calcium test is not fit for purpose: When the level of serum Calcium falls below ‘normal’, the brain instructs the body to ‘scavenge’ Calcium from bones and transfer it into the circulating blood. Therefore, serum Calcium level remains constant and no ‘low body calcium’ is detected by a serum Calcium test until bones start to break. Figure 2. shows how low Calcium results in low Cortisol. In those with Leaky-gut, high levels of Calcium leak through the gut-lining into the bloodstream to mix with high serum Cholesterol causing arterial plaque and blockages, heart attack—requiring the fitting of a stent—or death. Hence the need for an accurate and reliable test for body Calcium. The 24-hour Cortisol Saliva Test is already used widely around the World]. Conclusions in regard to low Calcium—based on a serum Calcium test—should not be relied-upon unless a bone-density scan verifies suspicions.

**Blood-pressure:** Appendix 1. shows how Cortisol affects blood-pressure and, hence, blood-pressure data cannot be relied upon in the absence of a 24-hour Cortisol saliva test.



## Conclusion

An estimated 50% of all ill-health is caused by Leaky-gut. If Leaky-gut were to be seriously addressed then Governments and health providers could cut health spending by around 50% [c. €13 Bn per year in the Irish Republic]. Appendix 2. shows how gut bacteria give-off endotoxins that enter the bloodstream causing intestinal toxemia. Fresh garlic, every 5 days, kills-off gut bacteria; toxins then decrease over 36 hours as the liver cleanses the blood. In this way the damaging effects of Leaky-gut can be *managed*. Appendix 2. page 14 [available to download for free from [http://www.mauricecatterell.com/downloads/LG\\_May2019MS.pdf](http://www.mauricecatterell.com/downloads/LG_May2019MS.pdf)] shows that Leaky gut is caused in one of 7-ways: one of those being through consumption of gluten, primarily from wheat (which causes gut dybiosis), together with yeast and seed-oils. One way of *preventing* Leaky-gut would be to ban those commodities. Wheat flour can be replaced with rice flour. Frying oil can be replaced with butter, lard, or by grilling in natural fats. Yeast in [yeast-containing] vinegar products can be replaced with 'non-brewed-condiment' (the chemical equivalent of vinegar, used in fish & chip shop outlets). Appendix 2. shows that the following Leaky-gut inspired maladies could either be eliminated or drastically reduced:

Allergies; rendering inhalers obsolete	Asthma; rendering inhalers obsolete
Low Cortisol ailments; rendering inhalers obsolete	Auto-immune diseases; including Cystic fibrosis
Grave's disease	Nasal Polyps
Zenker's diverticulum	Intestinal toxemia
Hiatus hernia	Gastroesophageal reflux disease
Retinitis pigmentosa	Menstrual problems
Sjogren's syndrome	Loss of taste and smell
Cardiovascular disease and heart attack	Stroke
Hormonal imbalance	Dementia
Alzheimer's	Multiple Sclerosis
Parkinson's disease	Cancer

## Recommendations

(i) Engineering precepts should be adopted in the field of medicine [(i) & (ii), *below*]: 1 month after birth, every child should have all clinical tests carried-out and the results stored on disc in a patient 'log-book', a copy of which should be given to the patient and updated on every visit. This would provide a historic benchmark for future referral; deviation from which, during check-ups, could be actioned immediately to enable 'preventative' maintenance rather than waiting for chronic sickness to reveal the need for corrective amelioration.

(ii) Patient feedback should be obtained following every treatment or medication to assess the effectiveness of the treatment or medication. This would help all patients.

(iii) The Irish HSE should investigate these matters, urgently, and revise the limits for Cortisol.

(iv) Patients with visible nasal polyps and/or difficulty in swallowing who have been referred to an Ear, Nose & Throat specialist by their GP should be checked by their GP for low Cortisol using the 24-hour Cortisol Saliva Test and offered Avamys and/or Seretide to reduce both nasal polyps and Zenker's Diverticulum during the 2 – 4 year waiting-list period. Those who have had polyps should be closely monitored for low Cortisol (using the 24-hour Cortisol Saliva Test) and the possibility of the development of a Zenker's Diverticulum.

v) Any deficiency in Cortisol, with 'normal' serum calcium levels should be clarified by a bone-density scan.

vi) If a patient's dietary input contains little Cholesterol but Cholesterol levels are high, then it should be assumed that the patient is sick and the body has entered 'healing mode'. The cause of ill-health should be investigated further with recourse to figure 2. and Appendices 1. and 2.. Statins should never be given to patients with high Cholesterol when in 'healing mode'.

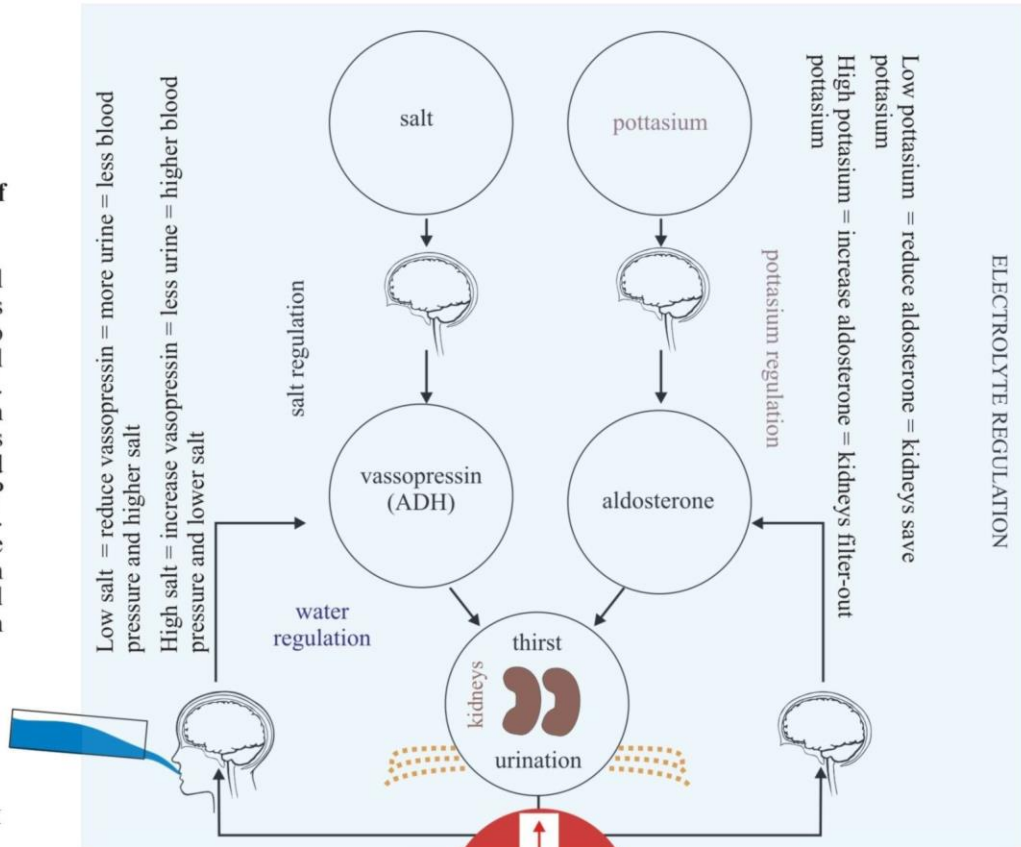
(vii) Leaky-gut may be eliminated, or severely curtailed, by banning the sale of wheat, yeast and seed oils.

(viii) The Irish HSE, in liason with the Medical Council, should select a team of PhD medical students to investigate the discoveries in the illustrations contained herein; to confirm the hypotheses—and reduce health spending by around 50% [c. €13 Bn per year]—or refute the findings.

# Blood-pressure Regulation

## Why BP is an unreliable indicator of arterial health

As build-up of arterial plaque increases BP is (normally) expected to increase. But if Cortisol is low, then BP will fall. Any rise in BP due to an arterial blockage is therefore nullified and offset by any fall in BP due to low Cortisol. Hence, BP cannot be relied upon as an indicator of arterial health in subjects with low Cortisol.



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Low BP = increase thirst = add water to blood = higher BP  
 High BP = increase vasopressin = more urine = lower BP

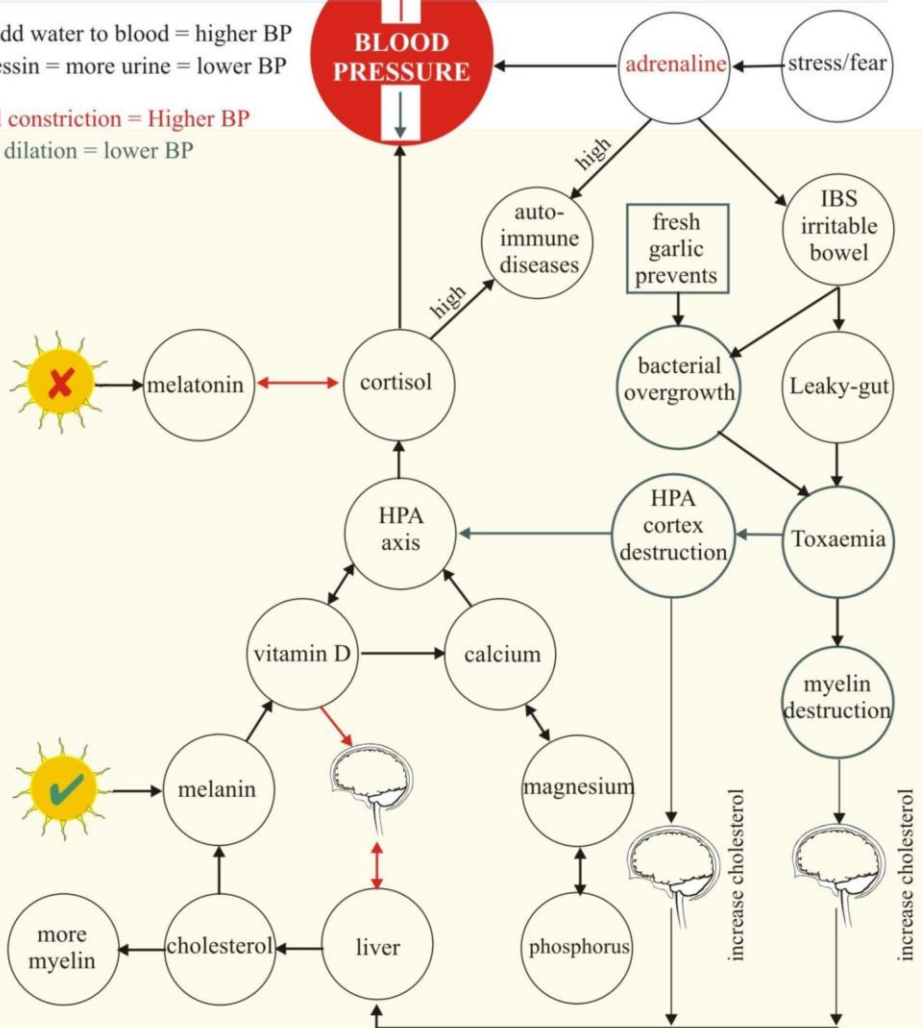
High Cortisol = blood vessel constriction = Higher BP  
 Low Cortisol = blood vessel dilation = lower BP

## Why extreme thirst is an indicator of low Cortisol

Cortisol constrains and relaxes arteries and veins. When Cortisol is low BP falls. Sensing this, the brain chokes-off the production of saliva, to encourage water intake; in an attempt to raise blood volume and, hence BP. But the effect of Cortisol on BP is more elastic than the ability of blood volume to rise through water intake. The thirst activation signal from the brain is therefore 'on' continuously and saliva permanently deficient resulting in permanent thirst.

CORTISOL REGULATION

— = via feedback mechanism

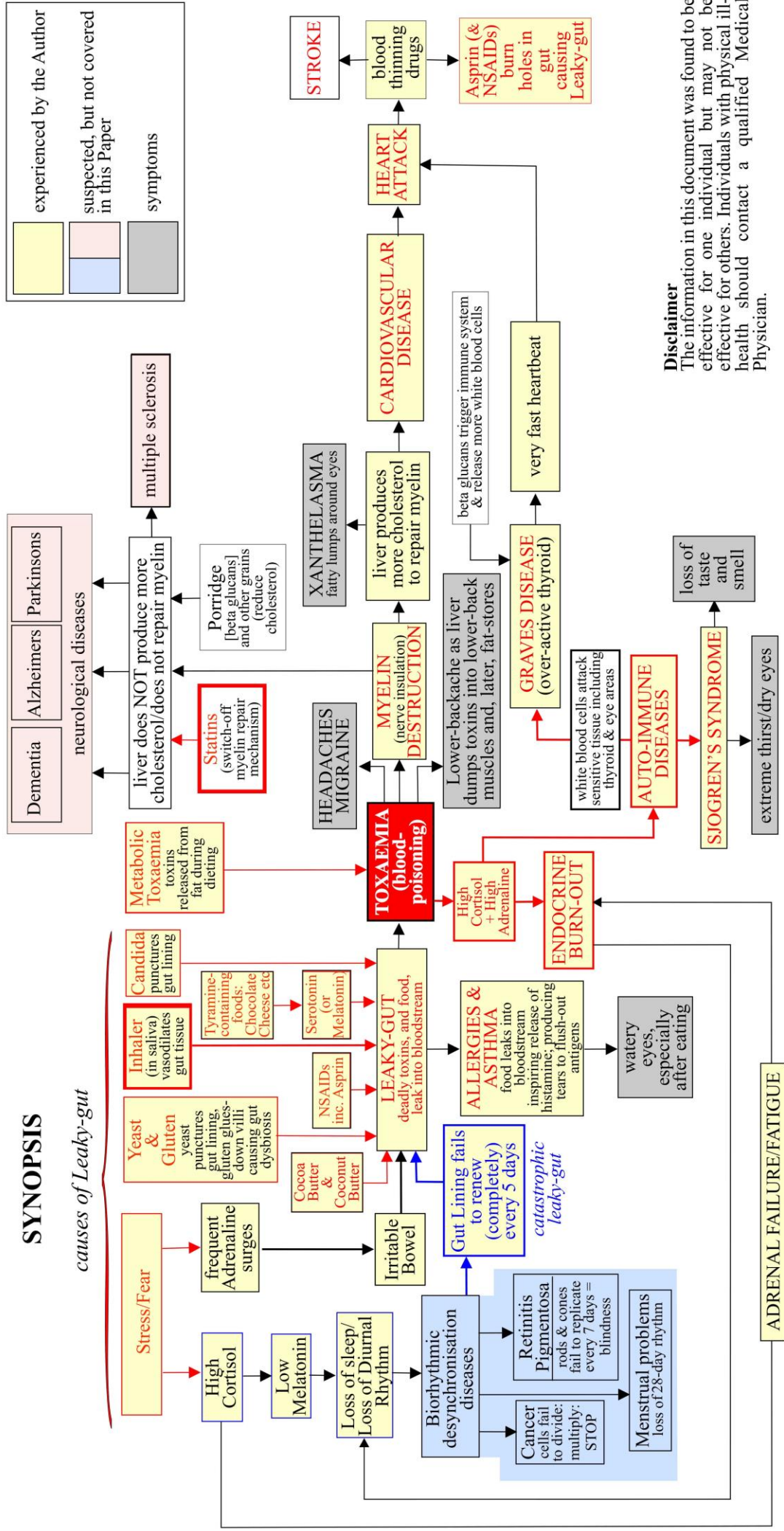




# Leaky-gut—the cause of allergies, asthma, and auto-immune disease

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**Disclaimer**  
The information in this document was found to be effective for one individual but may not be effective for others. Individuals with physical ill-health should contact a qualified Medical Physician.



Entire website



SEARCH

[Home](#) > [Blood Sciences Tests](#) > [Cortisol](#)

## Blood Sciences Test

### Lab Tests Online

Units: nmol/L

#### Reference Range

Note – change of assay 22/06/16, results are now around 20% lower than before.

For suspected adrenal failure, a 9 am cortisol is a useful screening test. Below 170 nmol/L is very concerning. Above 420 nmol/L normally excludes adrenal failure. Above 320 nmol/L makes adrenal failure unlikely if no strong clinical concern. If in doubt, discuss with an endocrinologist.

Suspected Cushing's syndrome should not be assessed with 9 am or random cortisol. If clinical concern for Cushing's, discuss testing methods with endocrinologist. A normal response to Dexamethasone is suppression of Cortisol to less than 50 nmol/L.

Synacthen tests: normal response is cortisol above 420 nmol/L on 30-minute sample. Consider pituitary failure if low baseline cortisol, especially if below 170 nmol/L in morning.

### Test Usage

Cortisol is the primary glucocorticoid of the adrenal cortex. Ten to 20% of circulating cortisol is loosely attached to albumin and 70 or 80% is bound to transcortin. The remaining 10% is unbound. Total serum cortisol is measured in the laboratory. Serum cortisol levels are lowest about 04:00, rise to their highest levels about 08:00, and then fall throughout the day to a nadir of 50% of the peak level by 20:00 hours. Obese patients tend to have increased cortisol production.



University  
of Exeter | Medical  
School





Accession No: A156812

# Adrenal Stress Profile



## Patient Details

Mr Maurice Cotterell

Hone  
Corr  
Lea  
W  
T

## Practitioner Details

Dr S  
Sar  
Up  
L  
K

**Client ID No:** IW27223  
**Accession No:** A156812  
**Patients DOB:** 22/02/1952  
**Sample Date & Time:** 13/11/2012 08:00  
**Date Of Report:** 22/11/2012 11:16

### Salivary Cortisol and DHEA - Age Group 51 - 60

#### Cortisol Levels

	Inside Range	Outside Range	
Sample 1 Post Awakening	<input type="text"/>	8.6	L
Sample 2 (+ 4 - 5 Hours)	<input type="text"/>	3.1	L
Sample 3 (+ 4 - 5 Hours)	3.2	<input type="text"/>	
Sample 4 (Prior to Sleep)	<input type="text"/>	0.5	L

#### Total Daily Cortisol

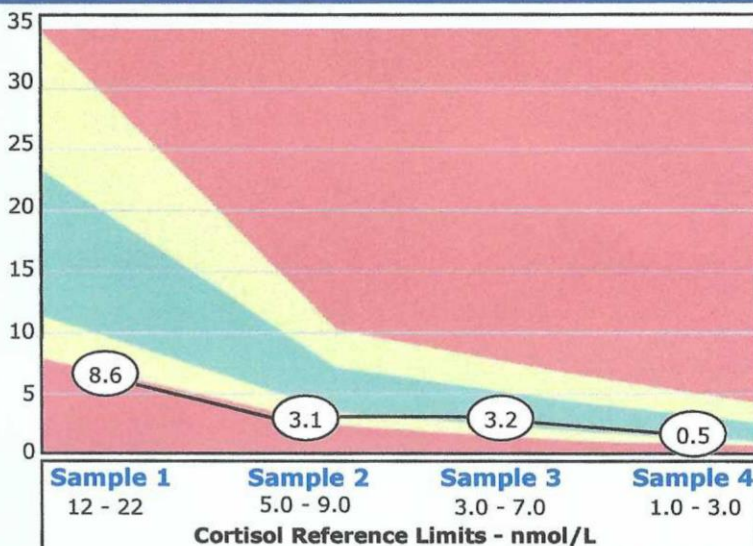
15.4 L  
 Range 21 - 41 nmol/L

#### DHEA Levels

Sample 2 (am)	0.46	<input type="text"/>
Sample 3 (pm)	0.52	<input type="text"/>

#### DHEA : Cortisol Ratio

3.18 H



Hormone	Reference Range (nmol/L)
DHEA Mean	0.20 - 0.70
DHEA: Cortisol Ratio	0.6 - 3.0

### Adrenal Stress Stage

Adrenal Fatigue - Non-adapted response. This generally indicates falling levels of both cortisol and DHEA from excessive stimulation/secretion over long periods of time. It can also reflect the effects of exogenous use of DHEA in adrenal exhaustion states after several months of DHEA supplementation.

**Commentary****DEVIATIONS FROM THE NORMAL CORTISOL RHYTHM**

The Morning cortisol level is below the normal range. Morning cortisol may be a good indication of peak adrenal gland function since they represent peak cyclic activity. Low morning cortisol levels suggest a degree of adrenal hypofunction.

The noon cortisol level is below the normal range. Noon cortisol levels may be a good indication of adaptive adrenal gland function since they represent the adrenal glands' response to the demands of the first few hours of the day. Low noon cortisol levels suggest a degree of adrenal hypofunction with decreased adaptive response.

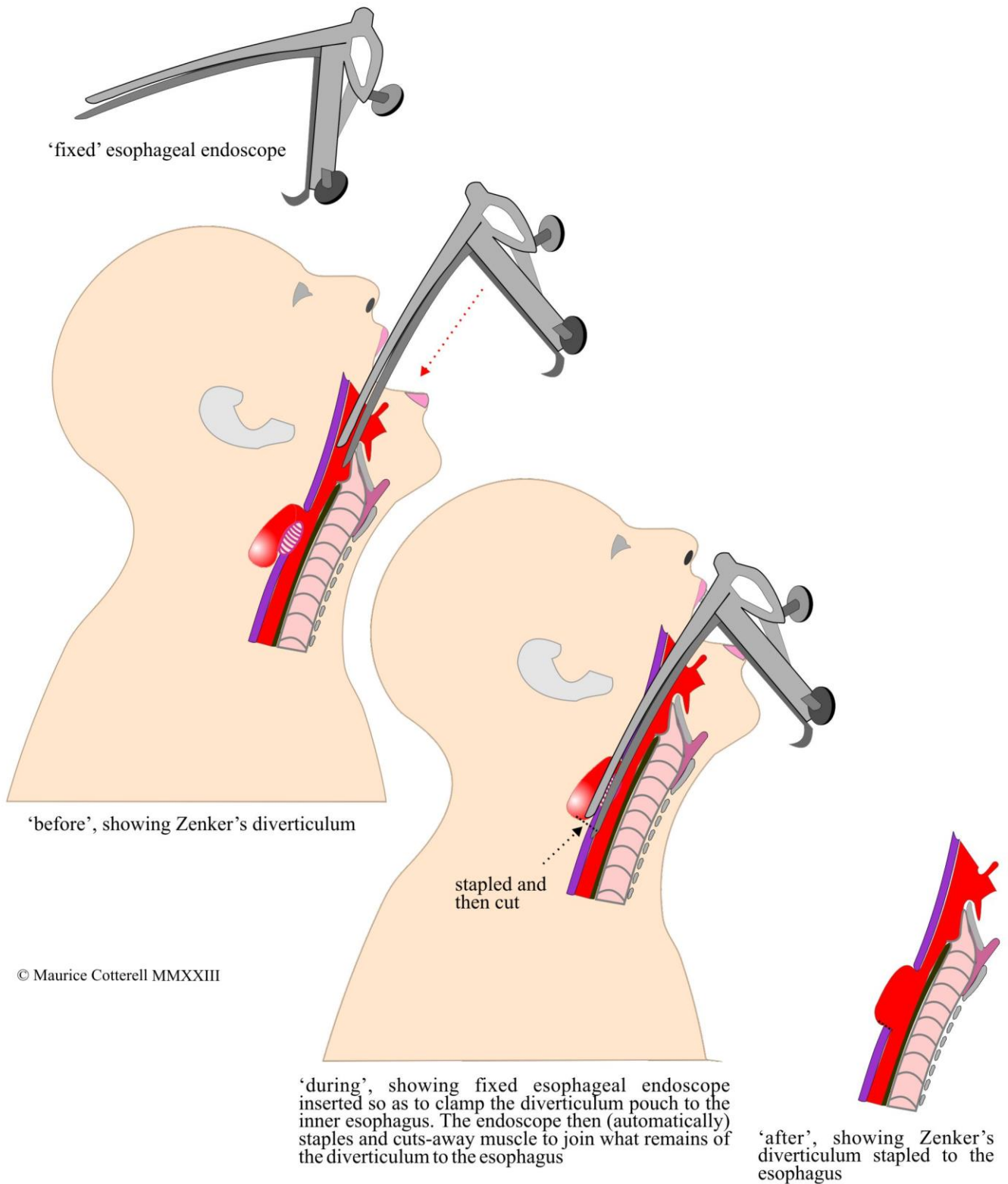
A Low midnight cortisol may be suggestive of suboptimal adrenal functioning, where low cortisol levels are present at other times.

**DEVIATIONS IN DHEA PRODUCTION**

None Seen



## Surgical operation to rectify a Zenker 's diverticulum



One of the methods of dealing with a Zenker's diverticulum using a 'fixed endoscope': The endoscope is inserted between the diverticulum and the esophagus wall. The endoscope then (automatically) staples and cuts-away muscle between the diverticulum and esophagus joining the two together. Other methods include 'flexible endoscope', 'introversion' (where the diverticulum is sucked into the esophagus and then dealt with) and 'open surgery'; where an incision is made to the external surface of the side of the neck followed by removal of the diverticulum. Each method has advantages and disadvantages.