

You and your Medicines

16th March, 2020



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>375 million prescriptions dispensed 2017-18

-approximately ~15 prescriptions per person per year.

-does *NOT* include non-prescription medicines (over the counter)

-does *NOT* include complementary medicines

>3000 different registered medicines available

2002: *70* different pain-relieving products

2019: *>150* different pain-relieving products

Pill popping society
‘a pill for all ills’
we don’t like to exercise
we overeat
we eat inappropriate energy-rich
rather than nutrient-rich foods
we smoke
we drink to excess
we would rather take a medicine
than to exercise and eat reasonably.







BUT

We do need medicines, and we need medicines that we can rely on for

- purity
- efficacy
- with minimal side effects.

Modern medicines are:

- powerful
- at times, life-saving
- life-prolonging
- may significantly improve quality of life
- may have side effects

Medications are *very powerful substances* which may manifest *unwanted effects* in some individuals.

Australia has an ageing population with an average life-span approaching eighty years.

Good news, because that means we are living longer.

Long life, however, does not necessarily mean a healthy life.



We have large and increasing numbers of older persons with

- multiple disease states**
- attending multiple prescribers**
- taking multiple medications**



**We stuff ourselves
with expensive and
useless vitamins**



Life expectancy in 2019 (Australia)

80.4 years for males

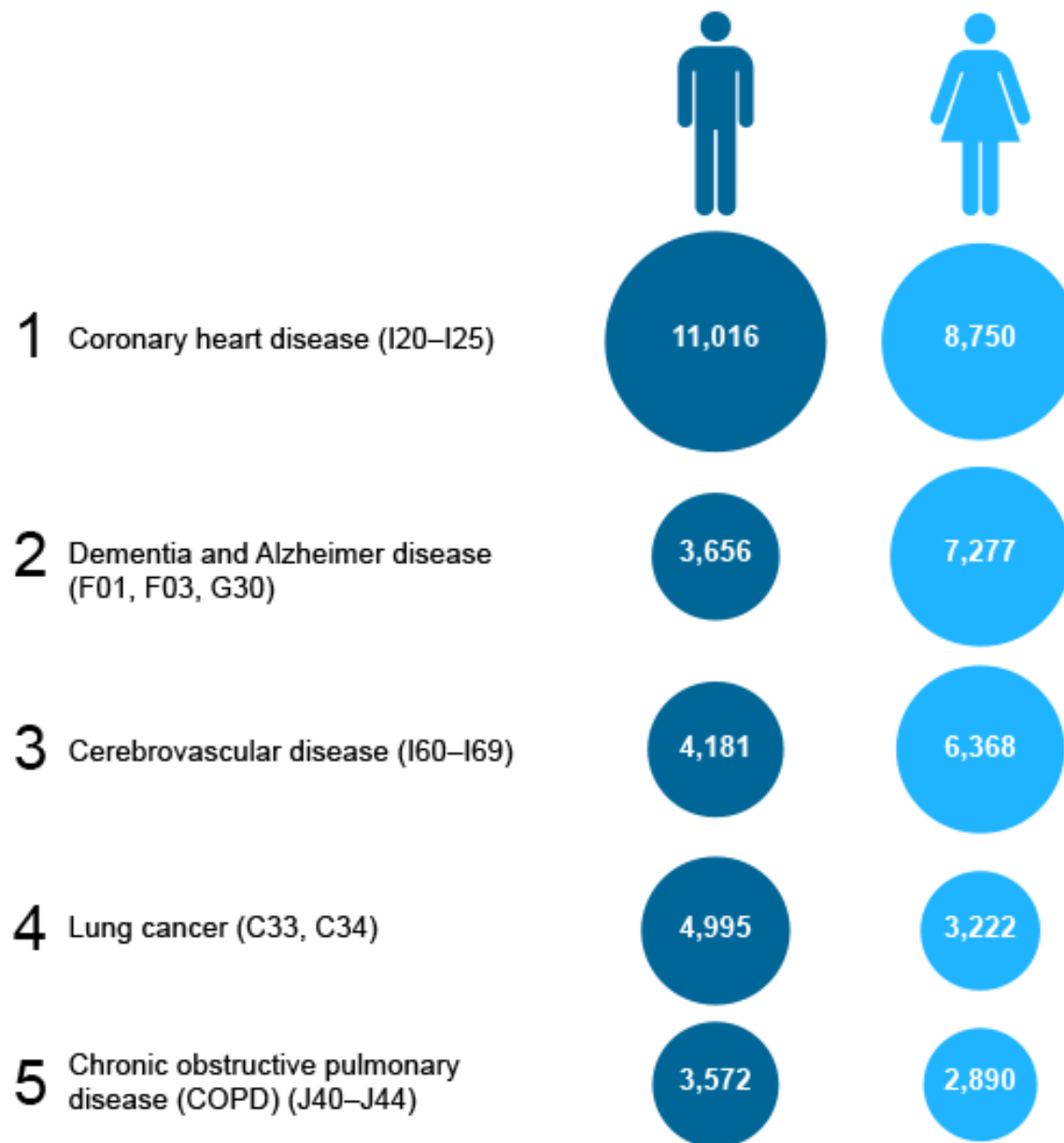
84.6 years for females

In 2015-16, Australia spent \$170 billion on health

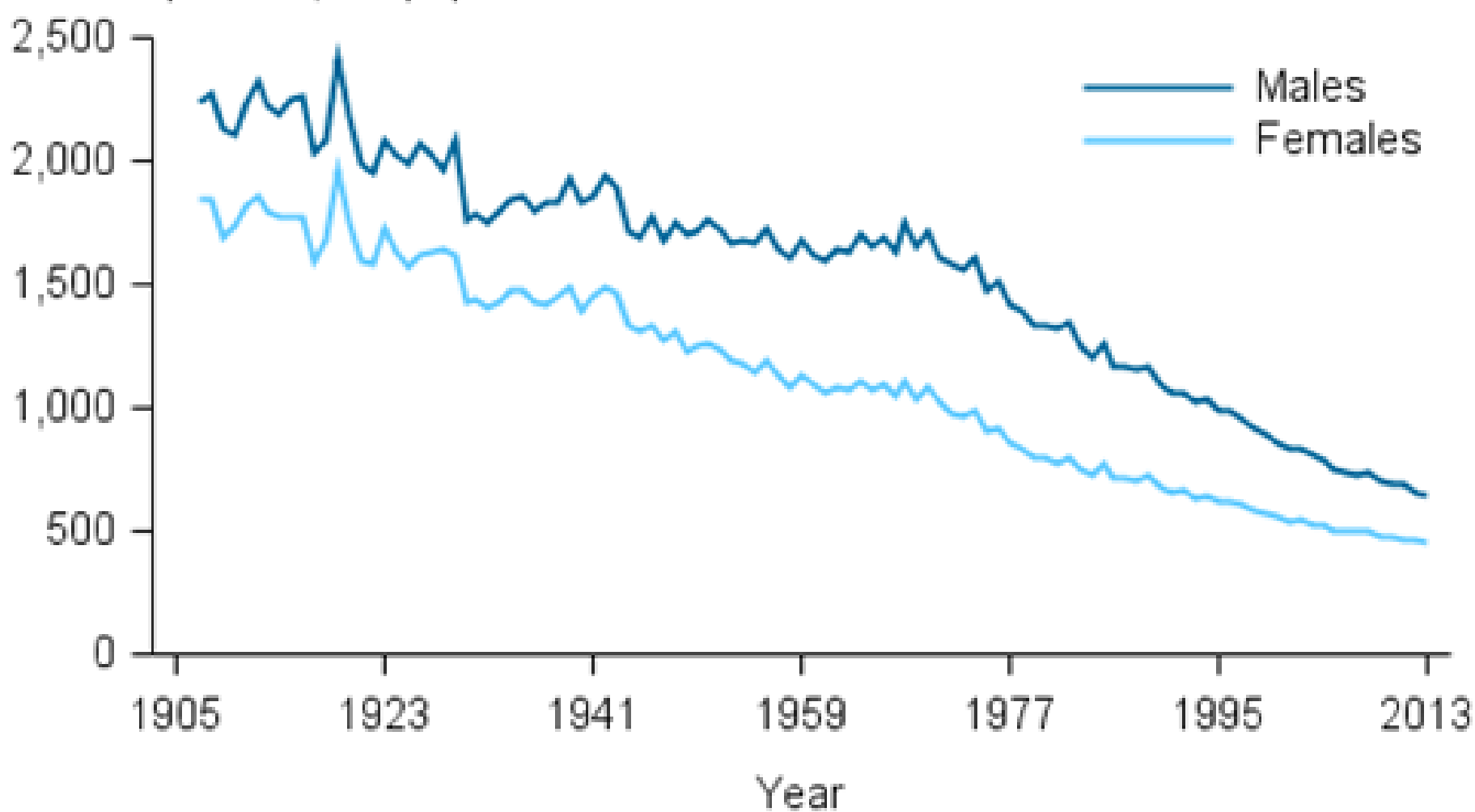
But > \$200 billion useless submarines



Leading causes of death Australia 2015



Deaths per 100,000 population



Our ageing bodies

Age 70 compared to age 30

Weight

- Regulates storage of medicines in the body
- 23-30% loss of muscle
- 14-30% increase in fatty tissue



Total body water

- Alters the body's response to medicines, and their rate of removal
- 17% drop in total body water

Our ageing bodies

Age 70 compared to age 30

Heart

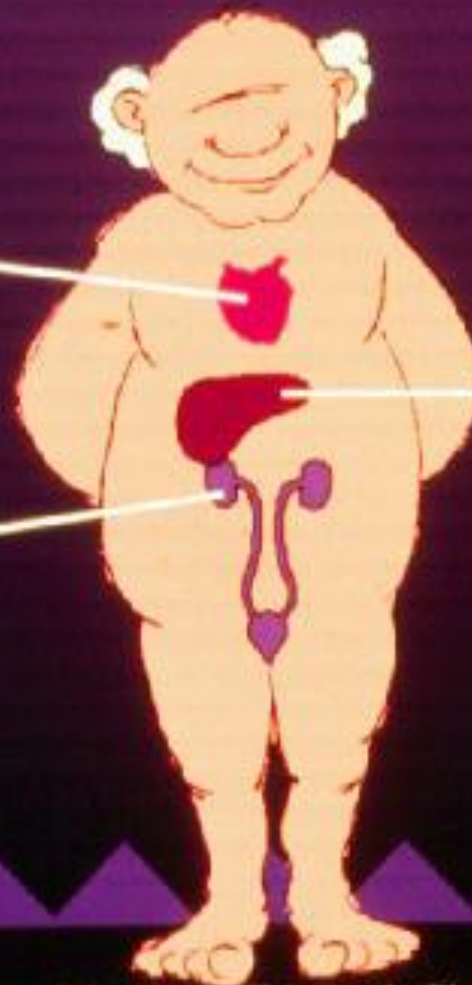
- Pumps blood and medicines around body
- 60% efficiency

Kidneys

- 70% efficiency
- Remove medicines from the body

Liver

- Changes medicines into forms which can be removed from the body
- Reduced ability to change medicines



Developed for the Department of Veterans' Affairs by the Pharmaceutical Society of Australia

The average 70-year old today is taking 2-3 more tablets than did the average 70-year old 10 years ago

Problems of Older Persons With Medicines

Difficulties in opening containers

Difficulties in reading labels

Difficulties in hearing verbal instructions

Difficulties in comprehending & remembering administration details (eg, multiple therapy)

Body changes due to ageing may result in different responses to medication than in younger people

Socio-economic state and non-adherence

Major Risk Factors for Cardiovascular/Cerebrovascular Disease

- **Hypertension**
- **Men >55 years**
- **Women >65 years**
- **Smoking**
- **Stress/anxiety/anger**
- **Total cholesterol >5.5 mmol/L**
- **Obesity**
- **Sedentary life-style**
- **Diabetes mellitus**
- **Family history of premature CVD**

Cardiovascular Guidelines Version 6, 2012.

THE AUSTRALIAN MALE: PROGRESS IN THE LAST 50 YEARS



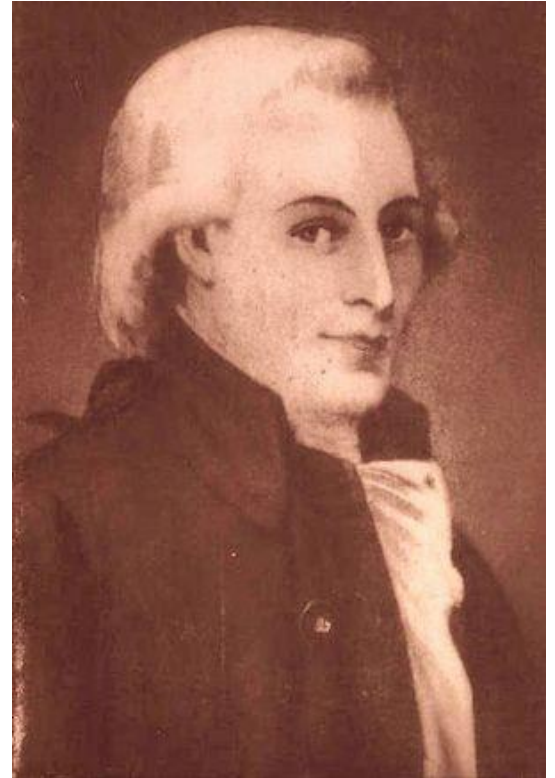
"First do no harm"

Hippocrates 450-355 BCE



***“In wise hands
poison is medicine.
In foolish hands
medicine is poison”***

**Giacomo Girolamo Casanova
(1725 –1798)**

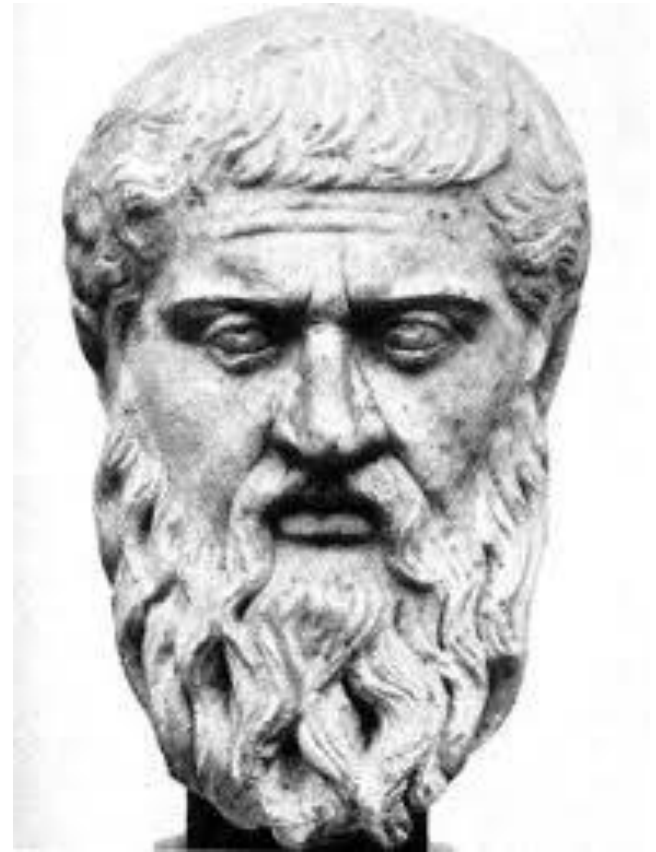




Yes, that's him

***“Lack of activity
destroys the good
condition of every
human being, while
movement and
methodical physical
exercise save and
preserve it”.***

-Plato ~400 BCE.



Adverse medicine reactions



WHO definition: (ADR)

“ ..a noxious, unintended or undesired reaction occurring at doses normally for the prevention, diagnosis or treatment of disease.”

Edwards IR et al. Lancet 2000; 356:1255-1259.

>250 000 Australians are *hospitalised* each year due to serious medicine-related events.



Additionally, > 400,000 GP consultations annually at which an adverse medicine event was reported and/or managed.

Most common medicines implicated in adverse medicine reactions are:

- anticancer medicines,***
- anticoagulants or blood thinning agents,***
- pain relievers and anti-arthritic medicines,***
- cardiovascular and blood pressure medicines***
- corticosteroids,***
- antibiotics***
- psychiatric or neurological medicines***

Remember!

ADRs can occur within

-minutes

-hours

-days

-weeks

-months or, even

-years

after commencing the medication



“I’ve been taking this medicine for months and therefore these symptoms that I am displaying can’t possibly be due to my medicine”

Check it out!

Ask questions

If you have the **slightest** suspicion that you are suffering from an adverse reaction, contact your doctor or pharmacist.



Who is at risk from adverse medicine events?

- older persons & very young
- people exhibiting poor adherence
- patients with multiple medications
- patients seeing multiple prescribers
- patients with multiple disease states
- patients with chronic and serious illness eg anaemia, asthma, diabetes, CCF, etc.
- patients exhibiting change in organ function (renal & hepatic function)



Potential medicine problems



- **Change of therapy**
- **medicine-induced disease**
- **Sub-optimal medicine selection**
- **Side effects/ADRs**
- **Duplication**
- **Adherence**
- **Monitoring**



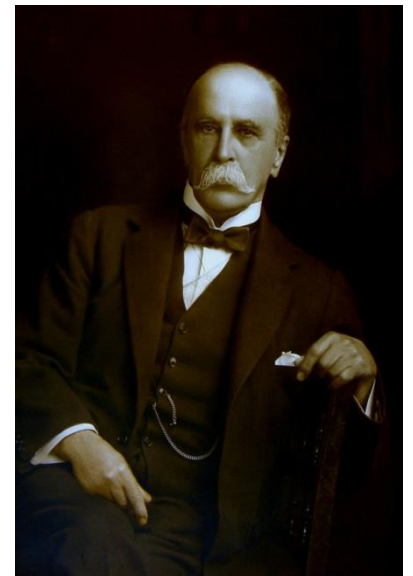
"Patients may recover in spite of medicines not because of them"



**Sir JH Caddum, 1959
(British pharmacologist)**

"But know also, man has an inborn craving for medicine, it really is one of the serious difficulties with which we have to contend"

**Sir William Osler 1894
(Canadian physician)**



Non-steroidal anti-inflammatory medicines(NSAIDs)



Traditional NSAIDs

- Aspirin -
- Diclofenac - Voltaren
- Diflunisal - Dolobid
- Ibuprofen- Nurofen, Brufen
- Indomethacin - Indocid
- Ketoprofen - Orudis
- Mefenamic acid - Ponstan
- Naproxen – Naprosyn
- Piroxicam- Feldene
- Sulindac – Clinoril
- Tiaprofenic acid – Surgam

COX 2 Inhibitors

- Celecoxib- Celebrex
- Lumiracoxib –
- Parecoxib
- Meloxicam (Mobic)

Common presentations of ADR effects in older persons

Effect

medicine groups

Confusion

**Benzodiazepines, phenothiazines,
anticholinergics, TCAs,
antiparkinson agents, narcotic
analgesics, anticonvulsants,
corticosteroids, theophylline,
digoxin, NSAIDS, cimetidine**

**Gait disorders
& falls**

**Benzodiazepines, phenothiazines,
butyrophenones, anticonvulsants**

**Postural
hypotension**

**Antihypertensives, diuretics,
phenothiazines, TCAs,
antiparkinson agents**

Common presentations of ADR effects in older persons

Effect

medicine groups

Incontinence

Diuretics, prazosin (reduced bladder neck tone), anticholinergic agents

Hypothermia

Phenothiazines, barbiturates, alcohol, benzodiazepines, TCAs, narcotic analgesics

Constipation

Anticholinergic agents, nefazodone, phenothiazines, TCAs, verapamil

***“I do not want two
diseases-one nature
made, one doctor
made”***

***Napoleon Bonaparte
1820***

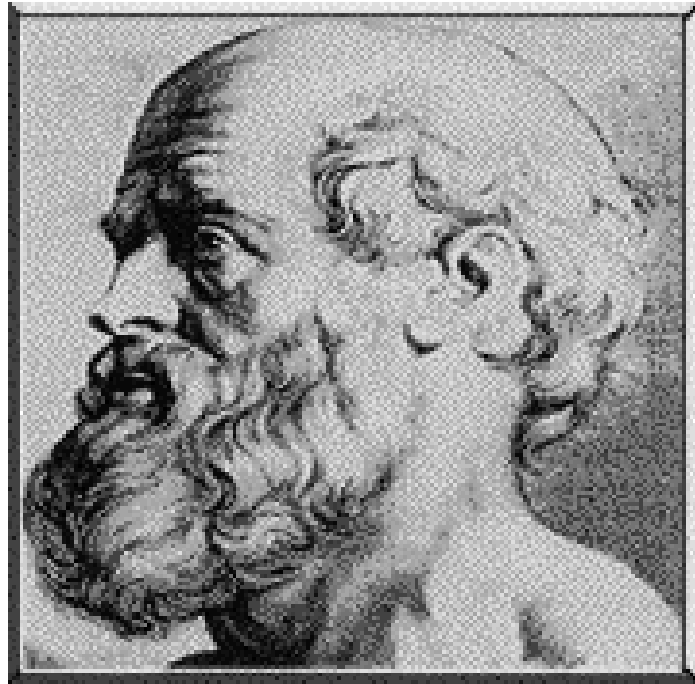


***“medicines don’t work in
patients who don’t take
them”***

C Everett Koop M.D.

Office of the Surgeon General (1982-1989)

“..to be alert to the faults of the patients which make them lie about their taking of the medicines prescribed and when things go wrong, refuse to confess that they have not been taking their medicine” .



Hippocrates circa 200 BCE

Non-adherence or non-compliance

is a major issue in medication management. Up to 50% of people taking medications are either not taking their medications appropriately, ceasing them or not taking them at all.

It has been shown that there is an increase in mortality in people not adhering to their medication regimens compared to those that do.

Rasmussen JN, Chong A, Alter DA. Relationship between adherence to evidence-based pharmacotherapy and long-term mortality after acute myocardial infarction. *JAMA* 2007; 297: 177-186.



*Ultimately, it is **you** who decides on a daily basis whether or not to take your medication as prescribed*

Consumer Medicines Information (CMI) Leaflets



A CMI includes:

- The name of the medicine
- The active ingredients/the inactive ingredients
- The dosage form of the medicine
What the medicine is used to treat and how it works
- Any warnings and precautions, such as when the medicine should not be taken
- Any interaction the medicine might have with food or other medicines
- How to use the medicine properly
- Side effects, if any
- What to do in the case of an overdose
- How to store the medicine properly
- The manufacturers/sponsors name and address
- The date the CMI was last updated



HMR

Home Medicines Review

Home Medication Review (HMRs)

Undertaken by an accredited pharmacist on the request of a GP for an eligible patient eg

- Taking more than 5 medicines or 12 doses per day**
- Adherence problems**
- Education required**
- Adverse drug event**
- Recent hospitalisation**
- Confusion**
- Must be carried out in the home unless special application**
- Comprehensive assessment of all medication management, drug interactions, inappropriate medicines, etc.**
- Letter sent to the GP with the findings**
- Can only be done every 2 years unless a medical need**

Medscheck – (MURs) Medication

Usage Reviews within the pharmacy

Not all pharmacies have taken it up

- General - 20 mins
- Diabetes- 45 mins



Brand substitution

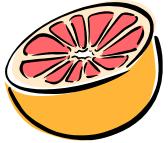
Introduced in Australia to reduce costs to PBS in 1994

Generally, there are no major differences between brands from the point of view of efficacy and adverse reactions.

However, many consumers, particularly older patients become confused and may end up taking two or even three brands of the same medication and consequently getting themselves into an overdose situation.

Cautionary & Advisory Labels

Xcal 1 This medicine may cause DROWSINESS and may increase the effects of alcohol. If affected, do not drive a motor vehicle or operate machinery.	Xcal 1a This preparation is to aid sleep. Drowsiness may continue the following day. If affected, do not drive or operate machinery. Avoid alcohol.	Xcal 2 DO NOT TAKE ALCOHOL while being treated with this medicine.	Xcal 3a Take on an empty stomach at least half an hour before meals and at bedtime.	Xcal 3b Take on an empty stomach at least half an hour before meals and at bedtime.	Xcal 4a Do not take dairy products, antacids or mineral supplements with a two hours of each dose of this medicine.
Xcal 4b Ask your doctor or pharmacist before taking medicines for heartburn, ulcers or indigestion.	Xcal 5 Do not take more than one aspirin tablet or capsule each day while being treated with this medicine.	Xcal 6 REFRIGERATE Do not freeze.	Xcal 7a Discard contents after / /	Xcal 7b Discard / / days after opening. Date opened / /	Xcal 8 Avoid excessive skin exposure to sunlight and sunbaths while being treated with this medicine.
Xcal 9 DO NOT STOP TAKING THIS MEDICINE abruptly unless otherwise advised by your doctor.	Xcal 10a This medicine replaces / Do not use both.	Xcal 10b DO NOT USE BOTH Active ingredient: This medicine replaces /	Xcal 11 DO NOT TAKE POTASSIUM while being treated with this medicine unless advised by your doctor.	Xcal 12 This medicine may affect mental awareness and/or coordination. If affected, do not drive a motor vehicle or operate machinery.	Xcal 13 Do not remove from original packaging until dose required.
Xcal 14 RINSE MOUTH with water after each use.	Xcal 15a This medicine replaces / Do not use both.	Xcal 15b Special handling and disposal required - ask your pharmacist.	Xcal 16 This medicine may cause drowsiness, especially when you start up. Do not drive or operate machinery until advised by your doctor.	Xcal 18 Avoid eating grapefruit or drinking grapefruit juice while being treated with this medicine.	Xcal 19a Continue PARACETAMOL. Consult your doctor or pharmacist if taking other paracetamol products.
Xcal 19b Consult your doctor or pharmacist before taking other medicines for pain or inflammation.	Xcal 20 Take once weekly on the same day.	Xcal 21 CAUTION: DO NOT TAKE THIS MEDICINE AFTER 30 DAYS OF OPENING.	Xcal 22 Use only with approved or recommended device.	Xcal 23 This product has been compounded by the pharmacist.	Xcal 24 FOR 3 DAYS USE ONLY can cause addiction.
Xcal 26 THIS PREPARATION IS AN ANTIBIOTIC. THE ENTIRE COURSE SHOULD BE COMPLETED.	Xcal 29 CAUTION CYTOTOXIC AVOID CONTACT WITH SKIN	Xcal 30 CAUTION: DO NOT TAKE THIS MEDICINE AFTER 30 DAYS OF OPENING.	Xcal 35 STORE BELOW 25°C	Xcal 39 PHARMACY SEALED GIVE TO PATIENT OR DISCHARGE.	Xcal 41 DO NOT DRINK ALCOHOLIC BEVERAGES when taking this medicine.
Xcal 42 ONE REPEAT LEFT ON THIS PRESCRIPTION	Xcal 43 TWO REPEATS LEFT ON THIS PRESCRIPTION	Xcal 44 THREE REPEATS LEFT ON THIS PRESCRIPTION	Xcal 47 LAST REPEAT THIS PRESCRIPTION CANNOT BE REPEATED WITHOUT THE CONTENT IN WRITING OF YOUR MEDICAL ADVISOR.	Xcal 48 THIS PRESCRIPTION CANNOT BE REPEATED WITHOUT THE CONTENT IN WRITING OF YOUR MEDICAL ADVISOR.	Xcal 62 LAST REPEAT FOR FURTHER REPEATS A NEW PRESCRIPTION IS NECESSARY.
Xcal 67 DELIVER	Xcal 70 The Mixture SHAKE THE BOTTLE	Xcal 71 Shake the Bottle	Xcal 71A Shake Well REFRIGERATE DO NOT FREEZE	Xcal 73 FOR USE IN THE RECTUM ONLY	Xcal 74 FOR VAGINAL USE ONLY
Xcal 76 RENEW/RECAP DATE AFTER OPENING DATE OPENED / /	Xcal 85 SUGGESTED TIMES TO BE TAKEN 7 a.m., 3 p.m., 11 p.m.	Xcal 86 DO NOT TAKE THIS MEDICINE IF ALLERGIC TO PENICILLIN	Xcal 89 PHARMACIST WISHES TO SPEAK TO YOU	Xcal 90 SHAKE WELL	Xcal 91 WARNING MAY BE FATAL TO CHILDREN
Xcal 94 IF YOU NEED THIS MEDICATION IT'S ADVISABLE THAT YOU DO NOT SMOKE	Xcal 95 PLEASE CONSULT YOUR PHARMACIST OR DOCTOR BEFORE TAKING ANYONE WITH THIS MEDICATION	Xcal 96 THIS PRESCRIPTION MAY EXTEND THE EFFECTIVENESS OF ORAL CONTRACEPTIVES. CONSULT YOUR DOCTOR OR PHARMACIST.	Xcal 97 PLEASE GIVE 48 HOURS NOTICE BEFORE NEXT SUPPLY	Xcal 98 PRESCRIPTION OWING FOR THIS ITEM	Xcal 100 A LOWER PRICE BRAND OF YOUR MEDICATION IS AVAILABLE. PLEASE CONSULT YOUR DOCTOR OR PHARMACIST.
Xcal A SWALLOW WHOLE Do not crush or chew	Xcal B TAKE WITH OR SOON AFTER FOOD	Xcal C TAKE AT LEAST HALF AN HOUR BEFORE FOOD	Xcal D TO BE TAKEN UNTIL ALL USED	Xcal E CONTINUE FOR 14 DAYS AFTER SYMPTOMS CEASE	Xcal F TAKE IMMEDIATELY BEFORE FOOD
Xcal G TAKE IN THE MORNING drink plenty of water	Xcal H STORE FROZEN	Xcal I CERTAIN FOODS AND JUICES SHOULD BE AVOIDED	Xcal J SHAKE WELL BEFORE EACH USE	Xcal K FOR EXTERNAL USE ONLY	Xcal L CAUTION NOT TO BE TAKEN
Xcal M DO NOT SWALLOW	Xcal N CONTAINS PEANUT OIL	Xcal 101 CHILDREN'S PRESCRIPTION SHAKE THE BOTTLE	Xcal 104 FOR EXTERNAL USE ONLY	Xcal 106 THE MIXTURE SHAKE THE BOTTLE 1ml DOSE BY METRIC MEDICINE MEASURE	Xcal 107 URGENT ACTION THIS ACCOUNT IS NOW OVERDUE. PLEASE PAY IMMEDIATELY.
Xcal 103 CAUTION! Not to be taken	Xcal 105 a friendly reminder YOUR ACCOUNT IS OVERDUE	Xcal 106 ANY REASON? FOR THIS OVERDUE ACCOUNT? IF NOT, PLEASE SEND US A CHEQUE	Xcal 108 SHAKE THE BOTTLE	Xcal 109 LAST REPEAT	Xcal 110 MAXIMUM 6 PARACETAMOL TABLETS PER DAY
Xcal 110 PACK 1 USE THIS PACK FIRST	Xcal 111 PACK 2 USE THIS PACK LAST (IF PACK 1 IS FINISHED)	Xcal 112 DO NOT USE IF PREGNANT	Xcal 113 DO NOT REFRIGERATE	Xcal 114 ATTENTION DISCHARGE SCRIPT WRITTEN DATE OPENED / /	Xcal 115 DISCARD 30 DAYS AFTER OPENING DATE OPENED / /
Xcal 116 DO NOT INJECT ANY OTHERS. TREATMENT OF INJECTION SHOULD BE ADVISED BY YOUR DOCTOR OR PHARMACIST.	Xcal 117 WE ENCOURAGE YOU TO ASK YOUR PHARMACIST FOR MORE INFORMATION OR ADVICE ON THIS PRODUCT.	Xcal 118 INTRATHECAL ADMINISTRATION CAN BE FATAL	Xcal 119 Do not take antacids, acid or calcium supplements with two hours of each dose of this medicine.	Xcal 120 TO BE TAKEN ONLY BY MOUTH BY THE PATIENT BASED ON THE LABEL. ON THE DAY STARTED ON THE LABEL.	Xcal 121 KEEP OUT OF REACH OF CHILDREN
Xcal 122 WARNING AVOID EXTRAVASATION	Xcal 123 Batch No.: / Expiry Date: /	Xcal 124 This container is not full but the quantity is correct.	Xcal 125 Store in a cool dry area away from light & below 25°C	Xcal 126 CM	Xcal 127 PROTECT FROM LIGHT
Xcal 128 CREDITED	Xcal 129 TESTER	Xcal 130 This container is not full but the quantity is correct.	Xcal 131 Store in a cool dry area away from light & below 25°C	Xcal 132 CAUTION PATIENT WITH SAME NAME	Xcal 133 CYTOTOXIC HANDLE WITH CARE
Xcal 134 DELIVERY	Xcal 135 WARNING AVOID EXTRAVASATION	Xcal 136 This container is not full but the quantity is correct.	Xcal 137 DISCARD 28 DAYS AFTER OPENING / /	Xcal 138 Changed by the Pharmacist	Xcal 139 PATIENT'S OWN SUPPLY DO NOT ORDER FROM PHARMACY



Label 18

18

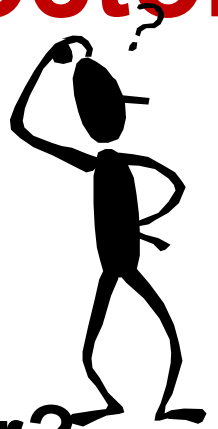
Avoid eating grapefruit or drinking grapefruit juice while being treated with this medicine.

Label 5

5

Ask your doctor or pharmacist before using any other medicine including over-the-counter medicines or health products.

Questions to ask your doctor or pharmacist



- do I really need this medicine?**
- how long should I take this medicine for?**
- is this medicine contraindicated for any other medical condition I might have?**
- is this the right dose and dose frequency?**
- will I actually be able to use this dose form?**
- can I understand the instructions?**
- what sort of side effects can I expect?**
- what about medicine interactions?**

It is important that as a consumer of medicines you understand that it is to your health advantage to

- attend the same GP**
 - attend the same pharmacy**
- whenever possible**



The reason for this is that your GP and your pharmacist will have your medication history on their computers.

So, if you should happen to present a prescription to a new pharmacy:

it is vital that you give the pharmacist a list of any other medications that you might be taking

including over-the-counter medicines, vitamins and complementary medicines

which could interfere with your normal medications

Only then can your pharmacist carry out the appropriate checks and balances to ensure the best therapeutic outcomes for you.

Ask your doctor or your pharmacist



Complementary medicines



Natural is good!

Complementary medicine



Natural is good!

Synthetic is bad!

Complementary medicine



Natural is good!

Synthetic is bad!

Is this really so?



Complementary medicines

Homeopathic medicines

Poisons diluted beyond any presence

Natural products

Examples: *St John's wart*, echinacia, red clover, Devil's Claw, feverfew. etc, etc, etc

Efficacy? interactions with pharmaceutical

medicines????? The four Gs: Ginko, Garlic, Ginger & Ginseng with warfarin





Australian Government

National Health and Medical Research Council



Statement on Homeopathy 5/3/15

“Based on the assessment of the evidence of effectiveness of homeopathy, NHMRC concludes that there are no health conditions for which there is reliable evidence that homeopathy is effective.

Homeopathy should NOT be used to treat health conditions that are chronic, serious, or could become serious.

People who choose homeopathy may put their health at risk if they reject or delay treatments for which there is good evidence for safety and effectiveness.

The NH&MRC expects that the Australian public will be offered treatments and therapies based on the best available evidence.”

National Health & Medical Research Council (NHMRC) Statement: Statement on Homeopathy 5/3/15

People who are considering whether to use homeopathy should first get advice from a registered health practitioner.

Those who use homeopathy should tell their health practitioner and should keep taking any prescribed treatments.

The National Health and Medical Research Council expects that the Australian public will be offered treatments and therapies based on the best available evidence.”

Vitamins

Vitamin B &
Vitamin C

Multi Vitamins &
Anti-Stress

Vitamins

Vitamins

Vitamins

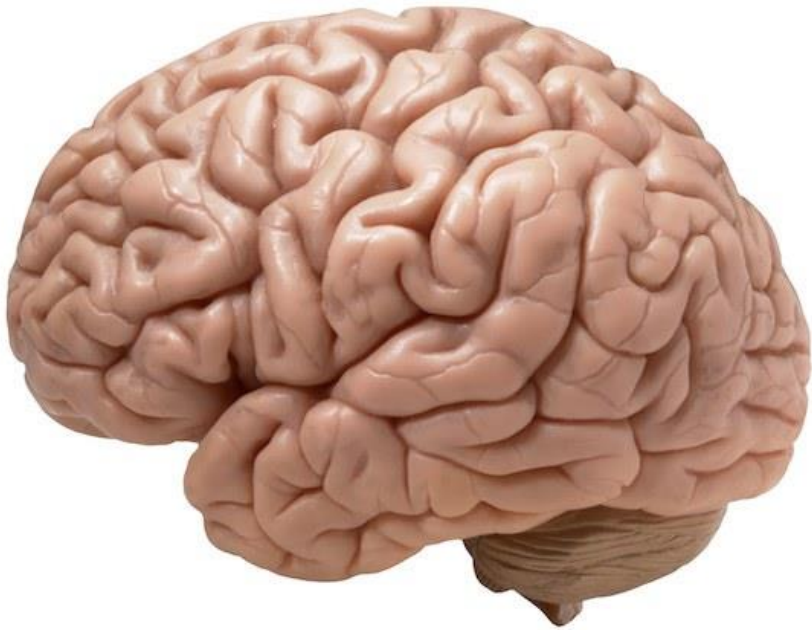
Vitamins

Vitamins

Vitamins

Vitamins

Walnut Brain



Beliefs about vitamins

Tiny is essential

Bigger is better

Bigger still is better still

**Biggest (humungous) is best
of all**

**Vitamins are the
best (and the only)
way to treat vitamin
*deficiency***

Vitamin industry in Australia

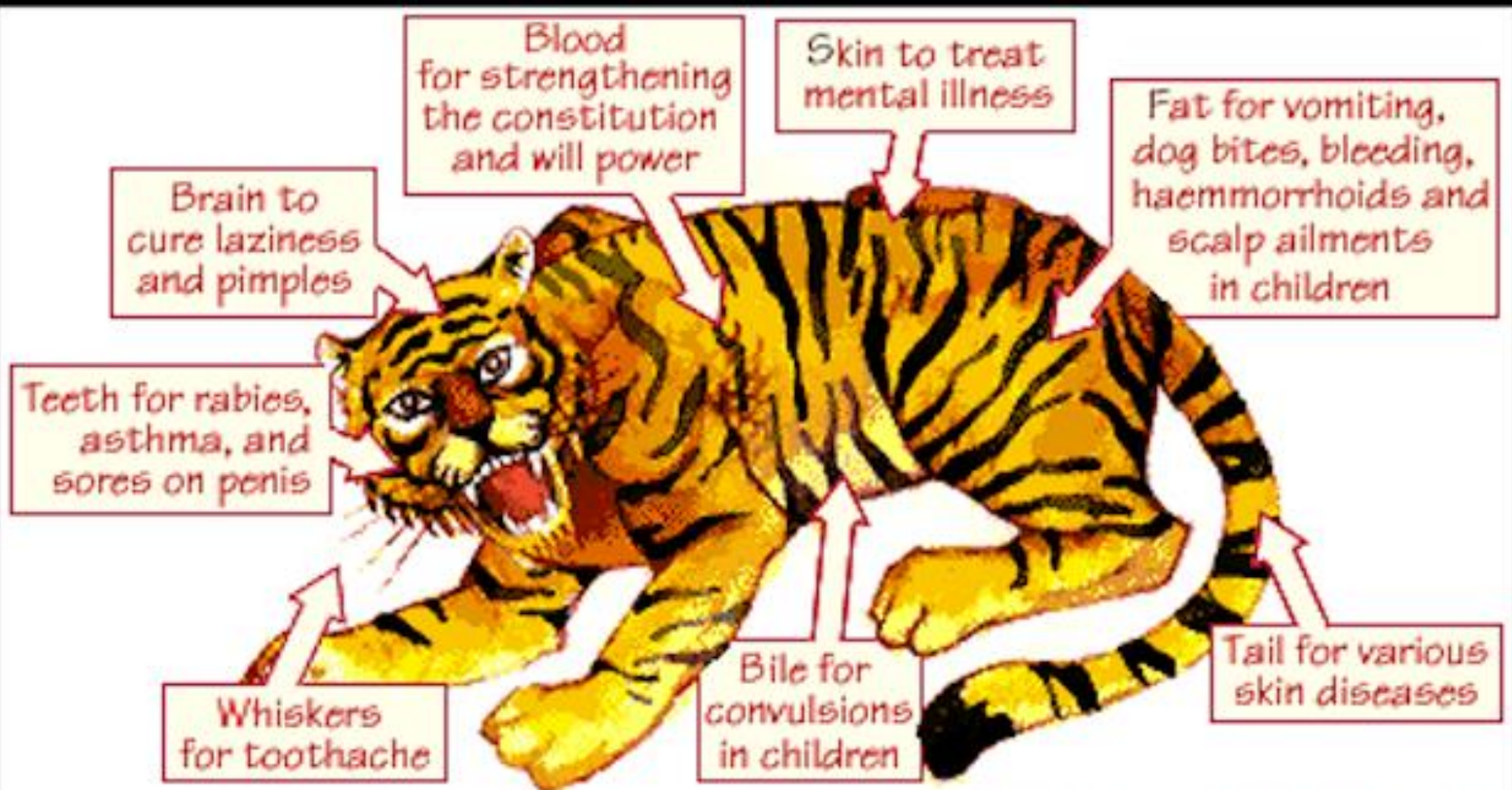
About \$1.9 billion

That's \$19000000000



Nicole Kidman-Swisse Ambassidor

[illegible]



TIGER PARTS USED IN CHINESE MEDICINE





"I'M SORRY DOCTOR, BUT AGAIN I HAVE TO DISAGREE."



ABC Catalyst program October, 2013: The Heart of the matter, 2-part program

**60,000 patients stopped
their statins following the
ABC Catalyst program**



Don't go until
you know

08.06.2004 16:49

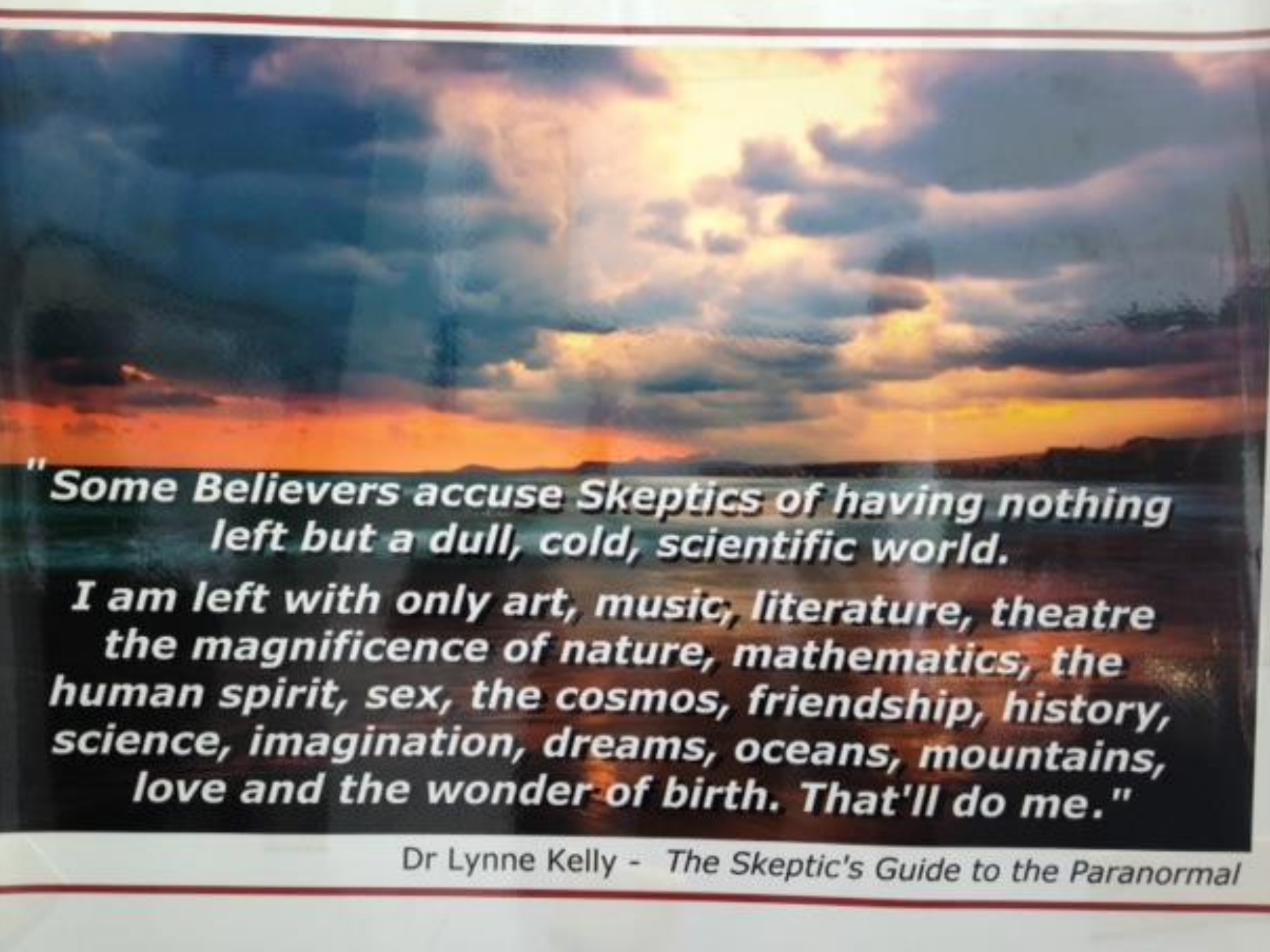
Ask your doctor or your pharmacist





OMG, I'm rich!
Silver in the hair,
Gold in the teeth,
Crystals in the kidney,
Sugar in the blood,
Lead in the butt,
Iron in the arteries,
and an inexhaustible
supply of natural gas!

*I never thought I would
accumulate such wealth!*



"Some Believers accuse Skeptics of having nothing left but a dull, cold, scientific world.

I am left with only art, music, literature, theatre the magnificence of nature, mathematics, the human spirit, sex, the cosmos, friendship, history, science, imagination, dreams, oceans, mountains, love and the wonder of birth. That'll do me."

Dr Lynne Kelly - *The Skeptic's Guide to the Paranormal*

SO, ONCE A YEAR YOU FLY
AROUND THE WORLD,
EATING MILK AND COOKIES
TEN MILLION TIMES IN
24 HOURS... I THINK WE'VE
FOUND THE KEY TO YOUR
WEIGHT-GAIN PROBLEM...



**Après 3 millions d'années
d'évolution**

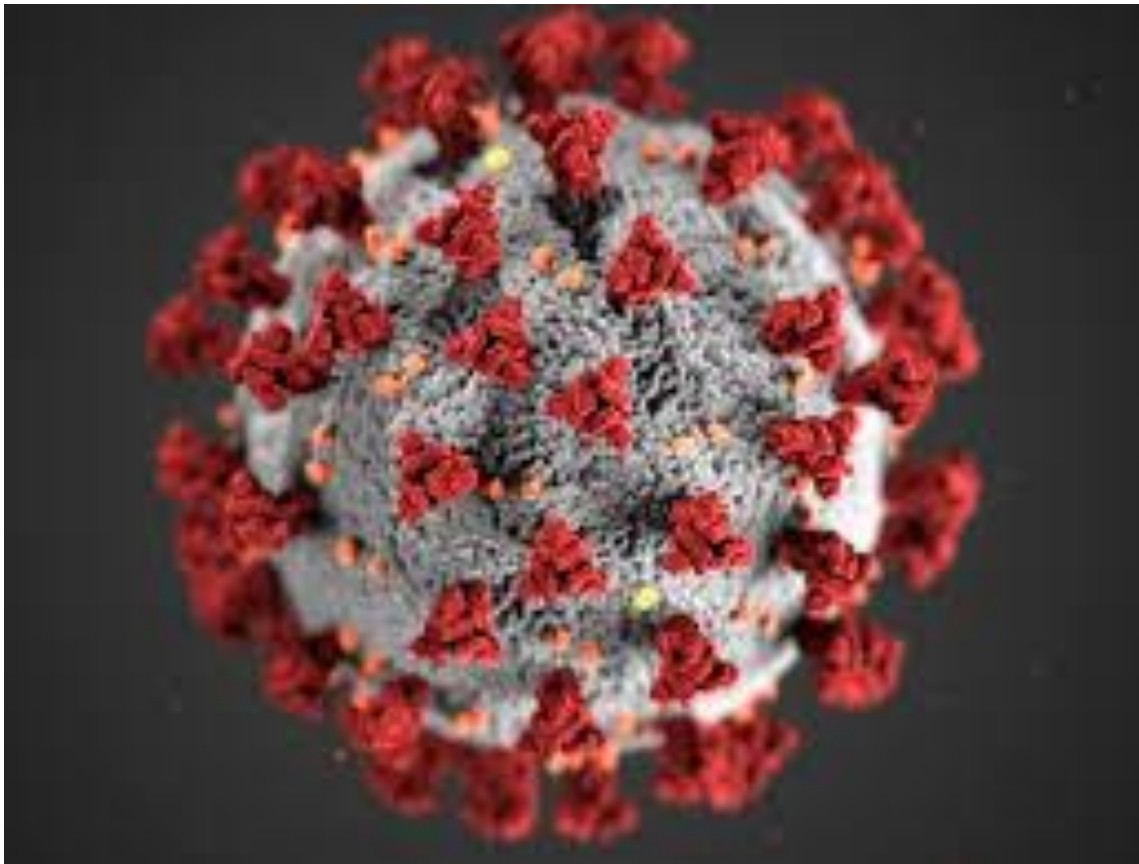


**nous n'avons perdu
que les poils !**

‘Patient counselling provides an opportunity to elicit the necessary information from a patient, and to enable safe and effective use of medicines.

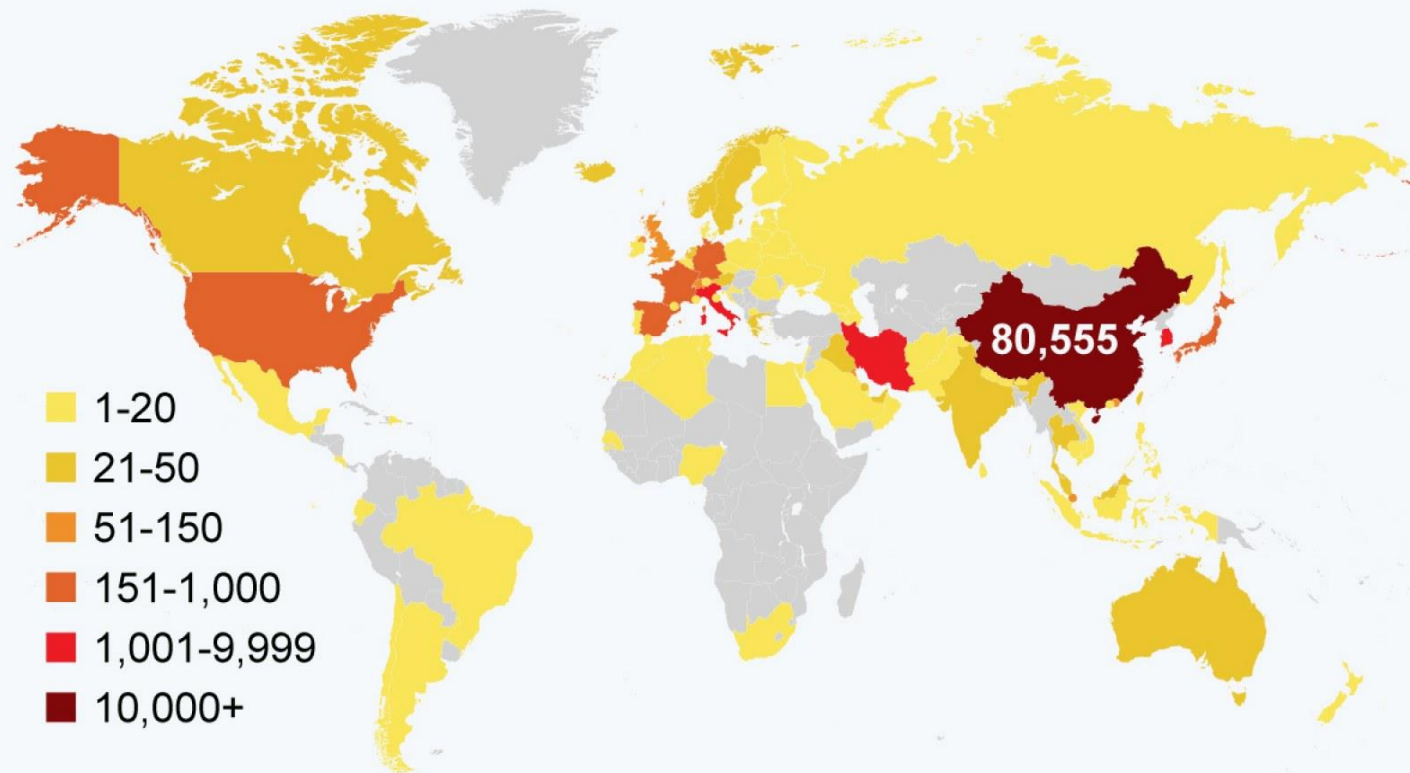
Patients have the right to expect that the pharmacist will counsel them privately about their medicines ... Counselling is also the final checking process to ensure the correct medicine is supplied to the correct patient.’

Pharmacy Board of Australia 2015



Nearly 100,000 Cases of COVID-19 Confirmed Worldwide

Locations by number of confirmed COVID-19 cases*



* As of March 6, 2020 at 4 a.m. EST
Source: Johns Hopkins University



Newsweek.

statista 

How to protect yourself from coronavirus (WHO)

Viruses tend to spread via cough and sneeze droplets.

Stay six feet from infected individuals.

Viruses can also be spread through droplets landing on surfaces.

There is anecdotal evidence that the virus can be spread by people before they have symptoms.

Wash your hands, wash your hands, wash your hands

Cover your mouth and nose with a tissue when you cough or sneeze,

Face masks may offer some protection

Seek early medical help Avoid live animals.

Returning from infected area

Seek medical advice before leaving home.



THANK YOU!