Incapacitated

Two pilots on an airline flight will never eat the same meal. Even if you've never thought of that before, it makes obvious sense as soon as you read it. As well as making intuitive sense, it also a good idea based on statistics. Gastrointestinal illness, including food poisoning, is the most common cause of pilot incapacitation. According to an ATSB report released in 2016, half of all serious incapacitation incidents in high capacity airline flights in Australia between 2010 and 2014 were gastrointestinal.

So what can you do to avoid it? Probably not much apart from avoiding the wrong food and drink. If you're the one doing the flying you're always going to be smart enough to avoid alcohol, or white meat that's undercooked, but what about foods that may be normally okay, but are not a good idea before flight? If you consider that the outside pressure in flight will be less than on the ground, but the pressure in your guts will stay the same, you can come up with a few items. This list isn't necessarily foods that will cause food poisoning, but they may make your trip a bit uncomfortable.

- Fast food – saturated fats are harder to digest at altitude.
- Cruciferous vegetables (Like that word? Good one isn't it?) – the likes of broccoli, cabbage, cauliflower and beans are more likely to produce gas.
- Salty snacks – these need a lot of water to digest, which is why they make you thirsty, but all the water can lead to bloating.
- Caffeine – it dehydrates you and is also a diuretic (Full of good words today!) That means there's not much point taking off with 5 hours endurance and planning a 3-hour flight if the endurance of your bladder is only 2 hours.
- Carbonated drinks.

According to the ATSB report, the second most common cause of pilot incapacitation between 2010 and 2014 was laser strikes. There's not a lot you can do about the lower life forms that shine lasers at aircraft other than report them, but the one key thing in the air is to avoid looking at a laser if you can. A laser is most dangerous when its beam is focused by a lens, and you have those in your eyes.

Barodontalgia (It's a veritable dictionary today isn't it?) is pain in your teeth caused by a change in ambient pressure. Imagine the pressure in a nice tooth cavity trying to equalize with the outside air. This explains why, once you're accepted for military aircrew training, one of the four medical specialists you see is a dentist.

Colds and flu don't feature much among pilot incapacitation statistics, partly because there's a fair chance you won't fly if your head is all blocked up, and partly because they're not necessarily going to render you totally incapable of flying an aeroplane. The most notable exception is if your Eustachian tube (Come on, that's not a new word!) is blocked. It connects your upper throat and the back of your nose with your middle ear, and it controls the pressure in your ears. When you take off and climb, and the outside pressure reduces, air will flow out of your ears via the Eustachian tube, thus ensuring the pressure inside your ears keeps pace with the reducing pressure outside. Even if you have a cold, this usually works. But it's harder for air to flow up that tube to your ears, which is what needs to happen on descent. As anyone who's experienced it knows, the result can be a very painful pressure differential on either side of your eardrums. And if your head is blocked, your sinuses will probably be hurting as well.

You are probably familiar with the Valsalva manoeuvre. Closing your mouth, pinching your nose and blowing may force air up your Eustachian tube into your ears to equalise the pressures.

Hypoxia is another factor that, as you well know, can cause incapacitation on a very permanent basis. It's pretty unlikely in the flying we do, and if you get hypoxic flying around below 10,000 ft you probably have underlying medical conditions that should preclude you from flying in the first place.

However, some of the better-known hypoxia incidents are ones that could quite possibly have been avoided through the right training. There are arguments about whether the benefits of hypobaric (decompression) chamber training outweigh the small risks of decompression-related trauma from the training. My not-so-humble view is that it should be part of a pressurisation endorsement. One part of the training that club members Dave Kerr, Chris Brady and I all did at the RAAF Aviation Medicine school at Point Cook was a "chamber run" at 25,000 ft. That involved sitting with masks on while the chamber was "blown up" to the required height. In accordance with the discussion above about pressure in your guts versus outside pressure, we were told "Don't try to hold it in" and "Stain is better than pain!" So we left the masks on for a while to allow all the noxious gases to dissipate, then off came the masks. Within about 3 minutes, by which time your writing on a pad had deteriorated to a doctor's standard, you were getting hypoxic and, most importantly, observing your first symptoms. First symptoms vary from person to person – maybe dizziness, tingly fingers, blue skin – but your own first symptom will always be the same. Mine is blurred vision.

The investigation into the Super King Air that took off from Perth for Leonora and crashed in Queensland in 2000 concluded that all on board had become incapacitated due to hypoxia. Unlike big jets, which have aural warnings in the cockpit when the cabin altitude goes above a certain level, the King Air didn't have an aural warning. But if the pilots were familiar with their individual symptoms of hypoxia, who knows? The outcome may have been different.

The Learjet that took off from Florida, carrying golfer Payne Stewart and five others, and crashed in South Dakota in 1999, suffered a similar fate. As for the Super King Air, with the aircraft destroyed and no survivors, it was hard to draw conclusive answers from the investigation.

A similar, but arguably more avoidable, crash was of a 737 that took off from Cyprus for Athens in 2005. The cabin pressure warning went off at 12,000 ft but the crew misidentified it as a take-off configuration warning because the sound is the same. Having the same warning sound for two different problems shouldn't be a problem, considering the take-off warning can only sound on the ground and the cabin pressure warning will only sound above 10,000 ft. The aeroplane flew on to its destination and, in the absence of instructions from the pilots, entered the holding pattern and stayed in it for 70 minutes until it ran out of fuel. (That, incidentally, is exactly what MH370 would have done if it had had a decompression that went unnoticed by both pilots.)

Fatigue is another one that is less likely to be a problem for most of us than for, say, long-haul airline pilots. Crossing multiple time zones and flying when sensible people are asleep are obviously risk factors, which airlines try their best to deal with via fatigue management plans, flight and duty time limits, long enough stopovers, and good hotels that have 24-hour check-in and room service, nice thick curtains in the rooms to block out the light, and whatever else you need to be able to sleep at any hour. The main risk for a Northam Aero Club pilot is probably the chance of flying after a long and busy day or week doing the job that allows you to pay for your flying.

The VFR Guide contains a little mnemonic that makes a good checklist for fitness to fly: IMSAFE.

- I – illness. Are you well?
- M – medication. Are you free from effects of medication or drugs?
- S – stress.
- A – alcohol.

- F – fatigue. Are you adequately rested?
- E – eating. Have you eaten properly?

Happy flying, and remember the ground is a much better place than the air to encounter any of the dramas discussed here.