

Unlocking the secrets of addiction

Drugs and alcohol are stunningly effective ways to have a nice day. So why does the pursuit of pleasure end in chronic misery for an unfortunate few? Adam Dudding investigates the mysteries of addiction - and the pitfalls of going straight.

The crisp bite of that first sip from a bottle of cold lager; the warming bitterness of cigarette smoke drawn deep down into the lungs; the startling euphoria that follows smoking methamphetamine; the infinite relaxation as molecules of heroin hurtle through the bloodstream to latch on to opioid receptors deep in the brain - there are many reasons to take alcohol and other drugs, and they all come back to the fact that they make us feel so damn good.

The chemicals that prod our brains so pleasingly are very specific in their effects (would sir like the substance that makes him feel giggly or paranoid or trippy or philosophical or messianic or talkative or cuddly or sleepy or all of the above?) yet all the complex changes wrought by recreational drugs appear to have one thing in common: they ultimately mess with the part of our brain that evolved to reward us for developing useful habits such as eating, procreating and socialising.

Taking drugs is like sex without all the awkward getting-to-know-you stuff; eating without needing to hunt or gather; great times with friends even if you have no friends.

And for most people, most of the time, most of these drugs work just fine: you get the chemicals into your body somehow, then something very complicated happens to the dopaminergic neurons in the ventral tegmental area of the midbrain and the nucleus accumbens in the limbic forebrain (don't worry - that's the last time you'll see those words) and you feel great.

But in some unlucky souls, something goes wrong.

An alignment of genes and circumstance turn that tickle of the neurons into an itch that must be scratched.

Over a period of seconds or days or weeks or years, the brain function that evolved about 500 million years ago to help our ancestors survive is hijacked, and hey presto, an addict is born - someone who will sacrifice pretty much anything, including their life, just as long as they can keep on taking their drug of choice.

In any given year, an estimated 140,000 New Zealanders, 3.5 per cent of the population, will exhibit a "substance abuse disorder" (ie, alcohol or drugs are stuffing up their life), and 13 per cent of us will have a problem over our lifetime.

Newspapers would be many pages thinner if all stories ultimately related to substance abuse and addiction were left out: the road deaths, the violence and crime, the accidents and illness, the falls from grace, the celebrity scandals.

This won't change soon. The government spends \$85 million a year on alcohol and drug treatment, reaching just 19,000 people.

Most addicts seeking abstinence will relapse several times.

Some alcoholics stop drinking only to get hooked on another substance, or start gambling compulsively instead.

The glimmer of good news is that many substance abusers outgrow their youthful idiocy, but fewer than one in 10 true addicts will experience total recovery and abstinence, which is why public health policy is directed towards harm minimisation (a philosophy that at its most despairing might suggest an alcoholic takes taxis to and from the pub rather than drive drunk).

The outlook, frankly, sucks.

So why does the simple pursuit of pleasure sometimes erode into chronic misery?

Alex*, A 33-year-old Aucklander working in the media, believes his alcoholism was inevitable.

When he first tasted wine at the age of 10 (followed immediately by the entire bottle, then copious vomiting), it immediately felt right.

"It was like a big weight being lifted off my shoulders."

Alex says he was acting like a classic alcoholic even before that: "Feeling like I didn't fit in anywhere, obsessive behaviour, inflated ego, being controlling, being charming in order to manipulate."

All this at 10?

"Definitely."

Within 18 months, Alex was raiding his parents' alcohol supplies.

Inspired by a school chemistry lesson, he created a crude still to turn a mix of vodka, whiskey and gin into a potent substance tasting like soap and petrol.

His friends gagged, but he chugged through the lot, often on his own.

For the next 20 years, Alex drank constantly, though he developed a successful career.

He also consumed vast quantities of magic mushrooms, smoked heroin for three years in his early 20s, routinely used ecstasy, and smoked cannabis for several years.

Alcohol was his passion, though.

His drinking was nothing like that of his friends, even those who also drank hard.

"A thing that sticks in my mind was turning to a mate of mine in my 20s and saying 'I f***ing hate alcohol'. And he said 'I f***ing love it'.

"I was amazed to find out that when normal people take a drink they start to feel out of control.

I always felt I was gaining control when I drank - until I'd have a blackout, or freak out, or attack someone."

Scientists believe 30 per cent to 60 per cent of an individual's vulnerability to addiction can be attributed to genetic factors (other critical factors include early traumatic life events, peer influences in adolescence, low socio-economic status, lack of parental support, prevailing social attitudes, cost of the substance and, crucially, its availability).

Both of Alex's grandfathers were alcoholics; perhaps he was doomed to drink. But how exactly could Alex's DNA control his repeated decisions to reach for a bottle, even after his realisation, at the age of 24, that he had a problem?

Around 100 different genes have been implicated in addiction, and the ways they hustle an addict along the journey from use to abuse to physical and psychological dependence are fiendish in their complexity and subtlety, and understanding of their effects is far from complete.

Several of those genes, though, are also associated with reduced moderation of impulsivity (did this make it easier for Alex to take that first slug?).

Others are connected to novelty seeking and risk-taking - just the recipe for experimental puffing, pill-popping and drinking, and yet another is associated with compulsive behaviour ("I really hated it but couldn't stop," says Alex).

But genes on their own won't make an addict. The drug itself has to do some of the work.

The two most obvious physical effects of drug dependence are the development of tolerance (needing more and more to get the same effect) and withdrawal (you feel crap when denied a top-up).

Meanwhile, parts of the brain that control impulsivity and compulsivity are eroded by chronic use (ie, "just saying no" becomes a virtual impossibility). It's a vicious combination of effects, but it gets worse.

Tolerance and withdrawal will fade once a user is on the wagon, but nothing can reverse other, long-term changes to an addict's brain: receptors to certain neurotransmitters remain sensitised forever, which explains why so many alcoholics fall off the wagon after years, even decades, after their last drink.

Alex hasn't had a drink for nine months, ever since a series of personal crises that culminated in a suicide attempt, a 76-hour alcohol detox in an Auckland hospital, a quick succession of drinking binges, then enrolling with an intensive outpatient course through Auckland's Community Alcohol and Drugs Service.

He has been attending Alcoholics Anonymous (AA) meetings ever since.

His cravings for alcohol still get particularly strong when dealing with something emotional.

"When a friend I was very close to said she was moving away recently, I left work and sat outside a bottle shop for 10 minutes at 2pm, in the middle of my workday."

Just driving past a bottle shop makes the thought of drinking "ping" into his mind.

Without AA, says Alex, he wouldn't be able to resist the cravings.

Doesn't all this suggest that, for all the science describing addiction as a disease involving neurotransmitters and genetics, the solution to addiction is willpower?

Hasn't Alex simply decided to get his act together where in the past he was too weak?

Not at all, says Doug Sellman, director of the National Addiction Centre in Christchurch.

The biggest misconception, says Sellman, is that addicts "have only themselves to blame and if they weren't so weak they'd be able to recover, and that it's an issue of free will, rather than being viewed as the neurological disorder it undoubtedly is.

No one starts out to become an addict."

For now, says Sellman, the most effective therapies are three psychological treatments: cognitive behavioural therapy, 12-step facilitation therapy (as used by AA), and motivational enhancement therapy.

Addicts who don't accept they have a problem have no chance, but even once they do, from there it's a long, painful journey, with plenty of opportunities to go off course.

But if the secrets of addiction are all about brain chemistry, shouldn't there be a miracle pill to cure it?

Some drugs are already being used with good results, although always in conjunction with psychological therapy.

Treatment of opiate addictions (heroin and morphine) has been greatly aided by the use of methadone to prevent physical withdrawal; Valium is routinely used to help alcoholics dry out safely.

Indeed, one of the reasons addiction to stimulants such as cocaine and methamphetamine (P) are particularly tough is that there are not yet equivalent substances that can act as replacements.

(Bruce Russell, senior lecturer in Pharmacotherapy at Auckland University says some GPs advise methamphetamine-addicted patients to double their consumption of coffee and cigarettes, as those "safer" stimulants can reduce cravings.)

Naltrexone, which is available but seldom used in New Zealand, has been shown to reduce cravings in alcoholics, and Sellman points to international testing of substances with such exotic names as Buprenorphine (for opioids), Varnicline (for nicotine) and Rimonabant (for overeating).

Overeating? Where did that one come from?

It seems the use of the word "addiction" to describe out-of-control versions of normal behaviours is more than just a drug company plot to define everything as a disease.

Studies show people "addicted" to sex, gambling, work or excessive eating are in fact caught up in similar brain-chemistry binds as their cousin

alcoholics and junkies, dopaminergic neurons and all.

The convergence of every disease of overconsumption in one part of the brain holds out the tantalising prospect of an uber-pill that might cure everything, but no one expects that any time soon.

For Alex, AA's 12 steps are keeping him together.

Given his extraordinary thirst (and the fact that drinking has almost killed him) he believes abstinence is his only hope.

Buying drink and drugs has cost him \$200,000 over the past 20 years, and it would have been much more if he hadn't always bought "horrible bargain bin white wine and cider".

Worse, it has cost him a lifetime of relationships. "All my friendships have ended either because I've sabotaged them or I've had a blackout, or I've tried to crash their car, or offended all their friends.

Just dickhead behaviour.

"I feel terrible about everything I've done to people and I've got to make amends.

I've only done about three people so far on a list of about 30."

He plans to be one of that small percentage of drinkers who get on the wagon and never fall off.

"I was mentally disabled for 20 years, is the way I've come to think of it.

But now I feel overwhelmingly happy at being able to live life like everyone else."

* Alex's name, and some identifying details, have been changed.

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