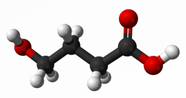
GAMMA HYDROXYBUTYRATE & GAMMA BUTROLACTONE (GHB/GBL): A CASE SERIES OF INPATIENT & OUTPATIENT DETOXIFICATION

Dr. Kiran Santlal[1], Dr. Zorina Gibbons[1], Dr. Peter McCarron[1], Dr. Eamon Keenan[2]
[1]National Drug Treatment Centre, Dublin [2]HSE-National Clinical Lead-Addiction Services

Introduction

GHB is a natural *endogenous neurotransmitter*. It can also be ingested orally and crosses the blood-brain barrier.
It is structurally similar to **gamma-aminobutyric acid** (GABA) and acts on **GABA & GHB receptors** in brain with effects on the dopaminergic system.[1]
It is rapidly eliminated and not detectable after:
4 hours in the **blood**
12 hours in the **urine**



The more recent primary mode of GHB abuse worldwide has been for its subjective effects on:
Sociability – increased confidence
Sexuality – higher libido & disinhibition
Sleep – chronic usage & higher doses

GBL & GHB are initially consumed during:
Club & Circuit Parties – as a precursor to after-parties
After-parties – *Drug cocktail*, with Ecstasy, LSD, Alcohol, Mephedrone, Cannabis, Sildenafil (Viagra), Cocaine, Crystal Meth
Saunas, Sex clubs & Chemsex parties – multiple partners (*average of 5*). Risk of *unprotected consensual sex*, and *unprotected non-consensual sex* (1 in 4 GHB users pass out).[2]
72 hour Chemsex binges may be the "Perfect Storm" for HIV/ Hepatitis C transmission. People involved in these parties may end up **losing days/turning up too late** for anti-viral drugs (PEP) or emergency contraception.

It is very easy to overdose on G because[3]:
- **Strengths** can vary from shipment to shipment
- **Doses** involved measured in such small quantities
- **Narrow therapeutic index**
  1 milligram = Euphoria
  1.5 milligrams = Sleep

Symptoms of GHB Overdose and Withdrawal[3,4]

Severity	Overdose	Withdrawals
Mild	Euphoria, nausea, ataxia, hypersalivation, vomiting, diarrhoea, headache, amnesia	Anxiety, tremor, insomnia, nausea & vomiting, hypertension, tachycardia
Moderate	Confusion/psychosis, agitation, drowsiness, tremor, myoclonus, urinary incontinence, hypotonia, hypothermia, hypotension, bradycardia	Severe anxiety, confusion, delirium, formication, visual hallucinations
Severe	Coma, convulsions,, ECG abnormalities (U waves), Cheyne-Stokes respiration & respiratory depression leading to respiratory arrest	Agitation, paranoia & psychosis Rhabdomyolysis & seizures (For transfer to ICU)

Onset & Duration	Overdose	Withdrawals
Onset	Within a few minutes of ingestion	1 – 2 hours after last dose
Progression	Rapidly progresses regardless of treatment	Rapidly progresses if untreated/inadequate treatment
Duration	Typically persists for 1 – 3 hours	Can last up to 12 days
Recovery	Rapid improvement (4 – 8 hours) with supportive hospital care. Withdrawal symptoms can develop up to 48 hours post recovery	Usually complete recovery with medication, and input from other members of MDT

Management of GHB Overdose and Withdrawal:

Acute Clinical Management	Overdose	Withdrawals
Assessment	Standard medical assessment Urine Drug Screening – outrule other causes	Current Substance (Polysubstance) Use. Quantify intake: "round the clock use" – dosing every 1 – 2 hours
Laboratory Investigations	Hypernatraemia, Hyperglycaemia, Hypokalaemia, Metabolic acidosis	Baseline; FBC, U&E, LFT, TFT, CRP Creatine Kinase – Rhabdomyolysis Urine Drug Screen, ECG
Management/ Medication	TOXBASE® recommends in clinical uncertainty, consider a Naloxone (opioid antagonist) first. Medical management.	Chlordiazepoxide/ Diazepam Baclofen Sodium Valproate Melatonin

Maudsley Guidelines (Community Detoxification)[5]

•*Dispose* of remaining supply & no GHB usage for 2 hours prior to prescribing Diazepam 20mg on 1st day of detoxification
• Repeat after 2 hours & Administer Baclofen 10mg
•Dispense another 40mg Diazepam & 30mg Baclofen
– Up to 60 – 80mg Diazepam/24 hours.

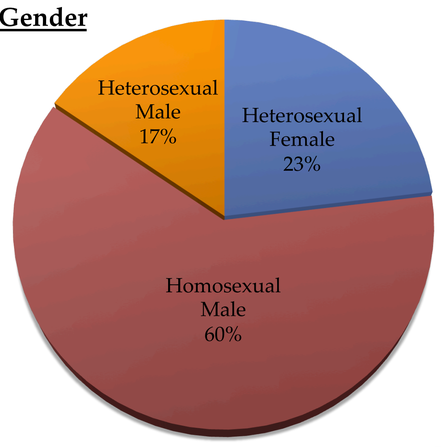
•If total Diazepam *>100mg/24 hours* not controlling symptoms, medical consultation recommended.
•Adjust *medication daily* – Seldom needed beyond 4 – 6 days
•Advisable to have Flumazenil available in the event of a Benzodiazepine overdose

NHS Lothian Guidelines for GHB Detoxification[6,7]

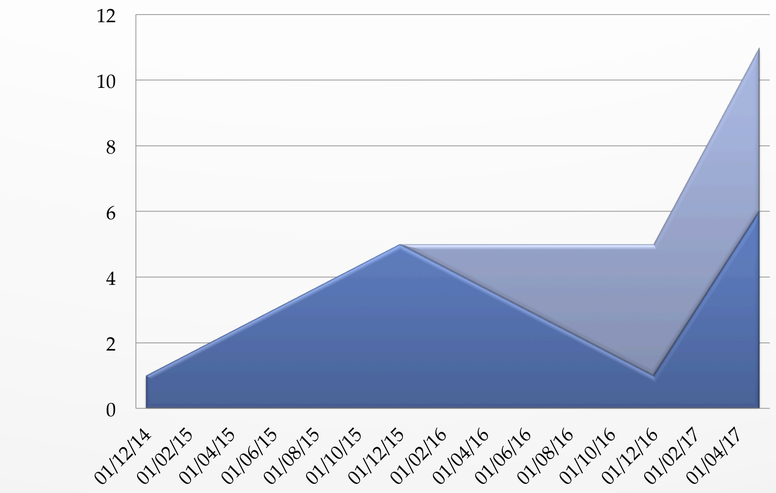
Day	Chlordiazepoxide	Baclofen
1	40mg 12 times/day = 480mg	20mg TDS = 60mg
2	30mg 12 times/day = 360mg	20mg 5 times/day = 100mg
3	40mg 6 times/day = 240mg	20mg 5 times/day = 100mg
4	30mg 6 times/day = 180mg	20mg 5 times/day = 100mg
5	20mg 6 times/day = 120mg	20mg TDS = 60mg
6	10mg 6 times/day = 60mg	10mg TDS = 30mg
PRN	Chlordiazepoxide 10mg to 40mg at 30-minute intervals. Max. dose = 120mg/24 hours	Baclofen 10mg 2-hourly. Max. dose = 50mg/24 hours
PRN Baclofen is given initially *in preference* to PRN Chlordiazepoxide, then both given alternately PRN, as this may reduce the total BZD dose.		
Also utilised in St. Michael's Ward, Sodium Valproate 300mg Nocte throughout admission – prevent withdrawal seizure activity		

Results

Sexuality & Gender

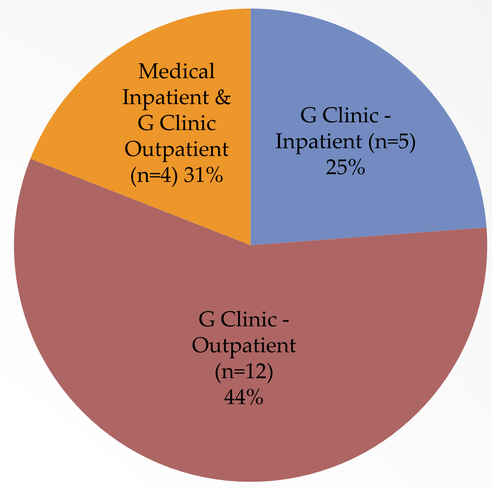


New Referrals & Re-referrals Since Commencement

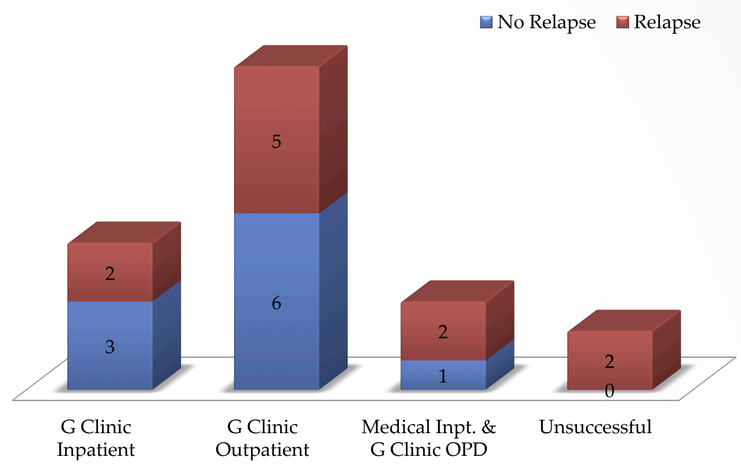


	31/12/14	31/12/15	31/12/16	26/05/17
Re-referrals	0	0	4	5
New Referrals	1	5	1	6

Treatment Episodes & Outcomes



Outcomes of G Clinical & Medical Detoxification



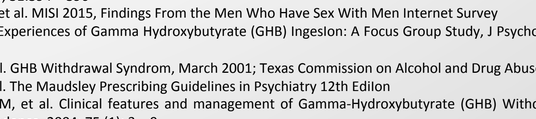
Discussion

Why Did They Relapse?
- Previously moved in G-using circles
- Unable to have sex without GBL/GHB
- Many liked person they were, "better than without it"
- Unable to cope with withdrawal symptoms e.g. anxiety, panic attacks, & insomnia for a several weeks
- Relapse on either GHB or onto alcohol

Patients can successfully detox but still be unprepared for what they might encounter on the clubbing scene
- Culture that can be defensive about right to use drugs
- Widespread normalisation and availability of drugs
- Porn-star expectations
- Online rejections
- HIV stigma

Highest risk of relapse was typically 1 week post detoxification – follow up must be structured & frequent for at least 4 weeks
Baclofen could be continued for up to 2 weeks after the regimen has ceased as this medication alleviates some distress

Harm Reduction Information
Harm reduction – Patient education: *Dosing* of G, *timings*, potentially *dangerous interactions* with other drugs or alcohol, potential for *sexual harm*, or other *health harms* that can arise from prolonged use or overdosing, G Card, G Posters & Information Packet



Resources Involved in Development of GHB Clinic:

National Drug Treatment Centre
St. Michael's Ward, Beaumont Hospital
Rialto Community Drug Team
General Practitioners, Medical & Psychiatric Teams in hospital
GUIDE Clinics & Gay Men's Health Project
Emergency Departments & Paramedics
Psychologists & Counsellors

Chemsex Working Group:
National Drug Treatment Centre
Gay Men's Health Project
Ana Liffey Drug Project
HIV Ireland
Gay Health Network

Methods

Criteria for inpatient management

"Round the clock" usage – every 1 – 2 hours, throughout the day
Previous unsuccessful detoxifications
Medically complicated picture – Epilepsy/BZD Withdrawal seizures
Alert Medical teams on call

Criteria for Outpatient Management of GHB Withdrawal:

Solely G usage – no regular usage of other substances
No medical history of *Epilepsy/BZD withdrawal seizures*
Supportive home environment – attend with designated non-substance using friend/family member who will monitor overnight
Potential *rapid access* to inpatient care
Early and *aggressive* management
Close monitoring over 2 – 4 weeks for tachycardia, insomnia, anxiety, and/or any medical deterioration

References:
[1]Noorden M, et al, Gamma-hydroxybutyrate Withdrawal Syndrome: Dangerous but Not Well Known. General Hospital Psychiatry 209; 31:394 – 396
[2]O'Donnell K, et al. MISI 2015, Findings From the Men Who Have Sex With Men Internet Survey
[3]Barker et al. Experiences of Gamma Hydroxybutyrate (GHB) Ingeslon: A Focus Group Study, J Psychoactive Drugs. 2007 Jun; 39 (2): 115 – 129
[4]Mio2o K, et al. GHB Withdrawal Syndrom, March 2001; Texas Commission on Alcohol and Drug Abuse
[5]Taylor D, et al. The Maudsley Prescribing Guidelines in Psychiatry 12th Edilon
[6]McDonough M, et al. Clinical features and management of Gamma-Hydroxybutyrate (GHB) Withdrawal: A Review. Drug & Alcohol Dependence. 2004; 75 (1): 3 – 9
[7]Decision Rules for GHB (Gamma-Hydroxybutyric Acid) Detoxificalon: A Vigne2e Study, Drug and Alcohol Dependence 135 (2014) 146 – 151