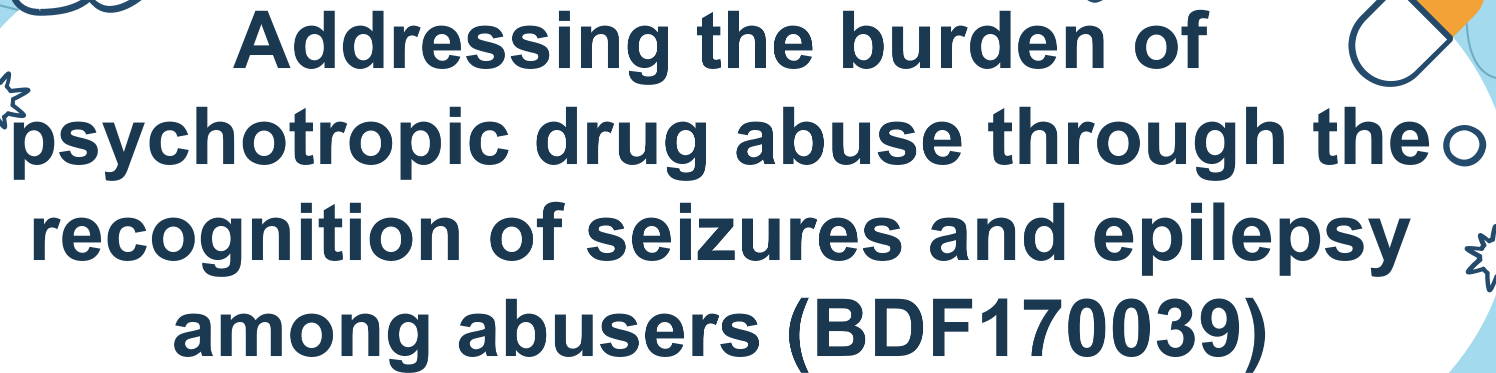
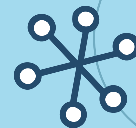


Addressing the burden of psychotropic drug abuse through the recognition of seizures and epilepsy among abusers (BDF170039)

Division of Neurology, Department of Medicine and Therapeutics, Prince of Wales Hospital



Background and Introduction

Drug abuse of psychotropic agents is an important medical and social problem which affects 7000-10000* individuals in HK

Drug abusers who develop seizure disorders constitute a serious health problem with many unmet needs

The Division of Neurology, Department of Medicine and Therapeutics, Prince of Wales Hospital has long recognized the importance of psychotropic drug use and seizure disorders/ epilepsy.

*Data from the Narcotic Bureau subject to revision

The clinical question and need

A study in 2011 already identified ketamine, methamphetamine and cocaine as important substances of abuse in this region*. Other drugs of abuse are also included in the current study.

Among psychotropic drug abusers, apart from psychiatric comorbidities, seizures are often overlooked

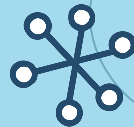
The mechanism of seizures can be toxic overdose, or following drug withdrawal. The latter is particularly important as drug abusers may run out of medications due to financial or other constraints.

Our study will explore whether prescriptional drugs are subject to abuse.

We want to understand whether treatment of seizure should be hand-in-hand with detoxification. Could there be long-term sequelae of seizures even after detoxification?

*Tang A, Cheung R et al East Asian Arch Psychiatry 2011; 21(1): 28-31

The clinical question and need

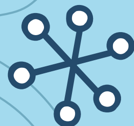


General doctors usually find it difficult to serve these clients. Why? These patients get admitted to the medical wards rather than psychiatric wards as *obiter* patients but we often lack the special team to help with these patients

We would like to thank BDF for the promulgation of this project and greatly helping the clients in need.

There is a great opportunity for collaboration and training with this project.

We would like to address both clinical and the community needs.



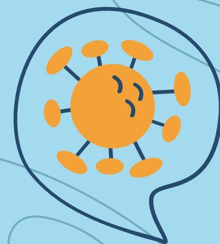
The BDF project for the psychotropic drug abusers

HA: Dr H Leung (Chief of Neurology, Service)

CUHK: Prof V Mok (Chief of Neurology, Academic Affairs)

Part-time doctor: Dr CK Wong

Full-time nurse: Ms Celia Tse



Clinical screening from medical wards/ neurology wards

Outpatient encounters from neurology clinics

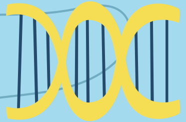
Treatment of seizures and detoxification

Follow-up and collaborations with multi-disciplinary colleagues

Output indicators

(1) Provision of 720 in-patient visits/ outpatient sessions
→ 875 (122%)

(2) Serving 120 patients with seizures and psychotropic drug abuse
→ 114 (95%)



(3) Reaching 120 family members of psychotropic drug abusers
→ 111 (93%)

(4) Providing 3 outreach seminars for 100-200 secondary school students → 2 seminars and 1 webinar (100%) and 508 students (254%)

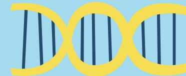
Outcome Indicators*

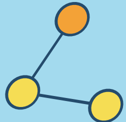
(1) Seizure outcome

(76 patients had 12-month outcome and 108 patients had a variable period of 1-12-month outcome. 9 patients either cannot be contacted or have already passed away):

69.4% with improvement in seizures

62% achieving seizure freedom





($p<0.05$)

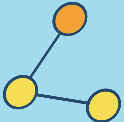
Outcome Indicators

(2) Rehabilitation outcome

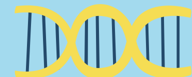
- 78.7% of patients achieving antiepileptic agent compliance and
- 52.8% showed 0-1 symptoms in tolerability questionnaire
- 72% reported statistically significant improvement in quality of life (QOLIE-31) ($p<0.001$)*

(Wilcoxon signed rank test, n=77, sum of positive ranks 782, negative ranks 1993, z value -3.26, $p<0.001$)

- 84% reported reduction of drug use
- 67.5% reported quitting of drug use
- Statistical improvement was found in reduction of drug use frequency (BDF questionnaire 7) ($p<0.001$)**



(Wilcoxon signed rank test, n=54, sum of positive ranks 161.5, negative ranks 2184.5, z value = -6.18, $p<0.001$)



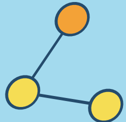
Outcome Indicators

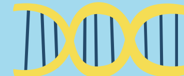
(3) Anti-drug attitude with medical consultations

75.9% reported improvement in anti-drug attitude.
Statistical significance was found in BDF questionnaire no. 18 ($p<0.001$*)
(Wilcoxon signed rank test, n=73, sum of positive ranks 344, negative ranks 2357, z value = -5.53, $p<0.001$)

(4) Anti-drug attitude with school seminars

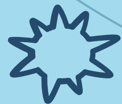
Statistical significance was found in BDF questionnaire no. 18 ($p<0.001$**)
(Paired t-test, $p<0.001$)



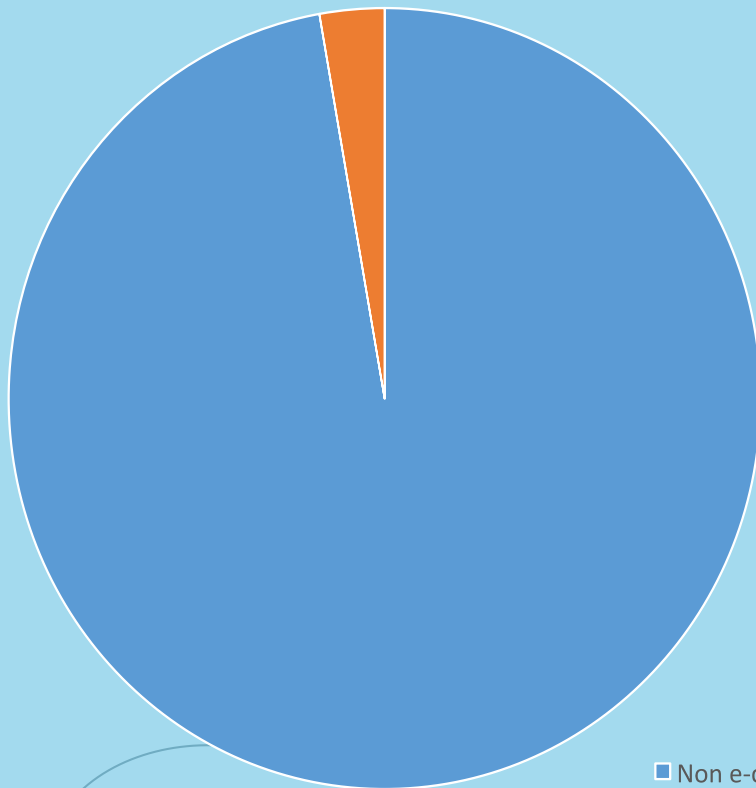


Types of psychotropic drug use

Zopiclone abuse remains the most common form of psychotropic drug abuse among seizure disorders



E-Cigarette



Proportion of overdose/withdrawal

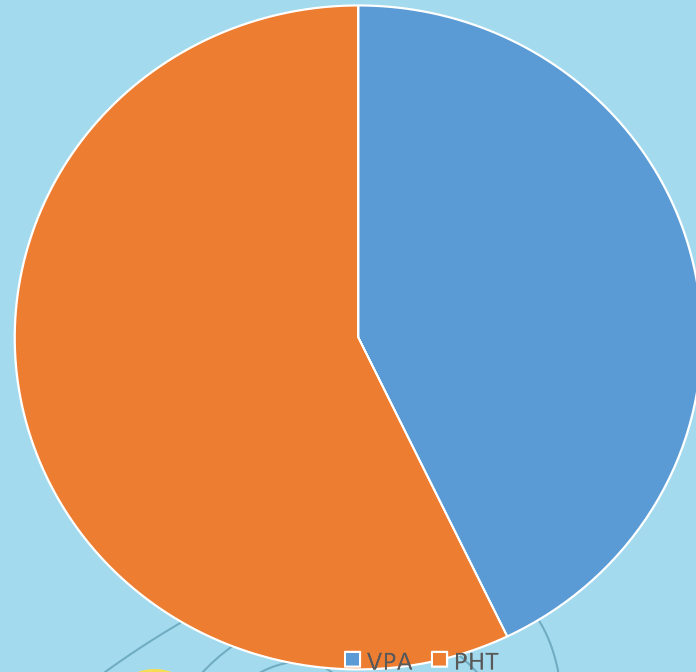
Why is withdrawal more of problem?

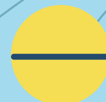
1. Frequency of events could be higher

2. Running out of medications is easier than taking an overdose

3. Overdose is more likely to enlist psychiatrist's support owing to possibility of suicidal attempt

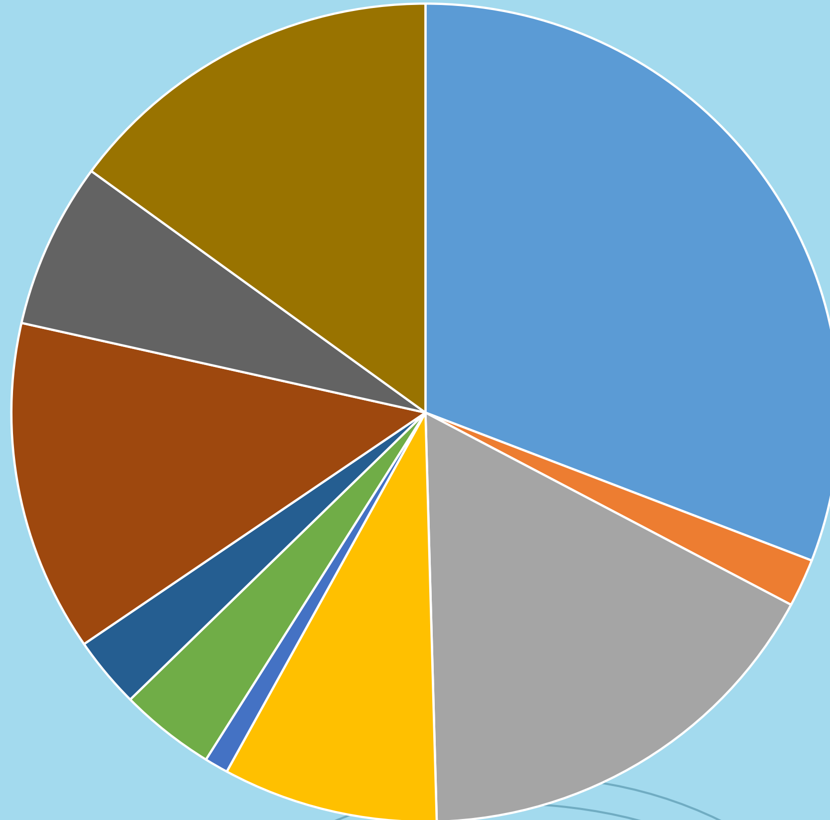
4. Higher likelihood of seizure during withdrawal





Antiepileptic drug treatment

Types of antiepileptic drug treatment



Factors associated with detoxification outcome

School talk to Ho Man Tin Government Secondary School

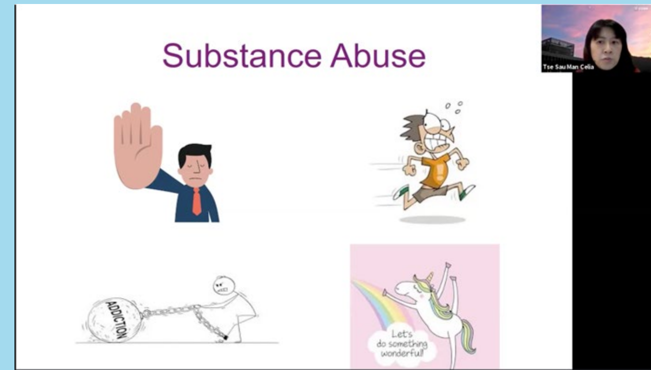
Before COVID, school talks were held as physical talks or seminars

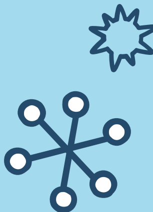
Lecture from doctor
Dates: 14/9/2018 and 20/3/2019

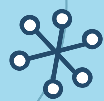
Quiz proved to be highly popular

School talk to International School Foundation

- A school talk was successfully performed via the on-line format on 20th Jan 2021.
- Lecture – delivered by Dr H Leung on psychotropic drugs and seizure
- Case sharing by 5 medical students
- Talk – delivered by Ms C Tse on brain health
- Question and answer session





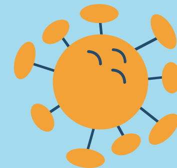


How does COVID-19 affect us?

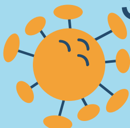
Suspension of clinic from Jan 2020 to Apr 2020 and again from Jul 2020 to Aug 2020.

Stopping clinical work by specialist nurse from Jan 2020 to Apr 2020 and again from Jul 2020 to Sep 2020.

The numbers were generally caught up after resumption of clinical duties as allowed by HA and CUHK. We will work hard with follow-up questionnaires and reach-out to family



School talks can only be delivered by online format.



Zopiclone abuse and seizures

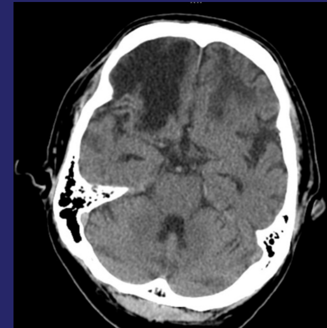
44 yr old English tutor
History of depression
Found by husband to have bathed for an abnormal duration
Drowsiness and brought to A&E
GTCS 5 min given PHT
Transpired that she had bromazepam and zopiclone from private practitioner
Intake was not entirely supervised
(4-5 tabs but up to 10 tabs if not able to sleep)
There was a period of withdrawal
Initially agreed by patient (pt) to go to psychiatric ward for detox
PHT changed to lamotrigine (LTG), folic acid
But then DAMA while in psych ward
(initially reluctant to enlist support from husband)

Zopiclone abuse and seizures

Another breakthrough seizure 1 week later
Finally admitted to psych for full detox
Motivational interview
Enlisted husband's support
Controlled replacement with zopiclone
(needs pill count)
No seizure >1 yr
Continual LTG as not able to entirely come off zopiclone
Anxiety with insomnia
Later on decided to emigrate
Letter for pt to receive continual care in foreign country

Tramadol abuse and seizures

40 yr old
Hx of IVDA, hep B/C and hx of ICH and epilepsy on VPA
Repeated admissions in 2019 and 2020 for seizures, one being status
Initially thought to have remote symptomatic seizure
Due to frontal encephalomalacia
VPA was titrated
Tramadol use only alleged to be 50mg qid



But informed by toxicology team that
Urine toxicology sample 3/20 showed supra-maximal peak suggestive of supratherapeutic exposure

Tramadol abuse and seizures

Pt all along declined psychiatric input
Multiple interhospital visits also created polypharmacy and abuse of tramadol

1. Simplified medication follow-up visits to reduce multiple iatrogenic sources
2. Tackle the phlebitis and varicose vein
3. Goal orientated tapering
4. Phone follow-up by epilepsy nurse

No seizure for 7 months now
Uses tramadol 3 times / week

Epidemiologic Reviews
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Advance Access publication: April 3, 2020

n Opioid–Related

Cerdá, Katherine M. Keyes,

iversity Mailman School of Public
du).

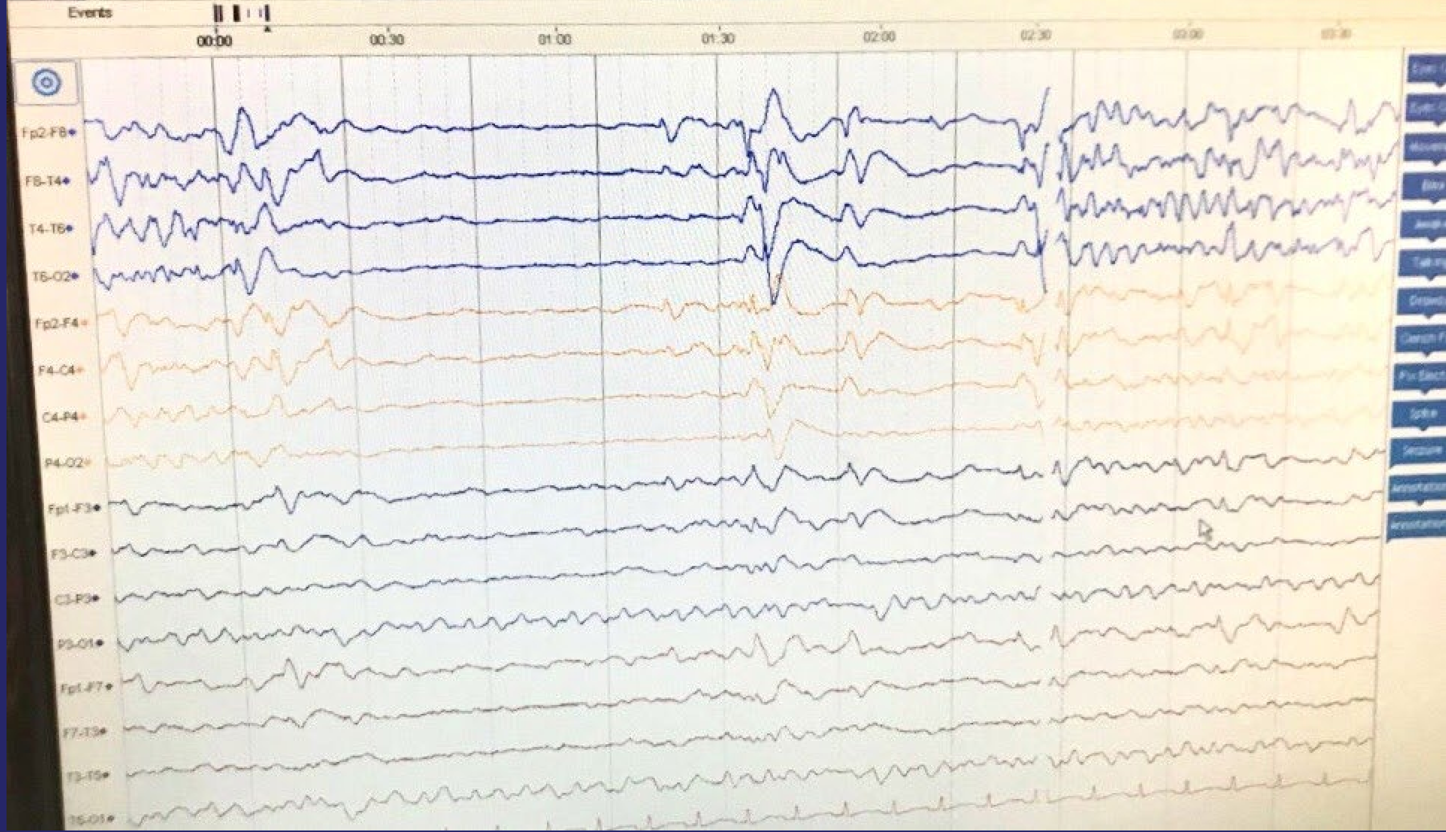
The ongoing opioid-overdose epidemic remains unabated. In 2017, opioid-related deaths accounted for 68% of the total drug overdose deaths in the United States (1). From 1999 to 2017, the annual number of overdose deaths related to opioids (including licit and illicit opioids) increased more than 600% (1). Moreover, the types of opioids involved in these deaths have evolved. From 1999 to 2010, commonly prescribed opioids were the leading cause of opioid-related deaths; these leveled off from 2011 to 2016 and were surpassed by synthetic opioids as the leading cause of opioid-related deaths in 2016 (1). Despite the evolution of the opioid epidemic from prescription to synthetic opioids as the leading cause of death, commonly prescribed opioids continue to play a significant role in the epidemic, and interventions to improve opioid prescribing behaviors remain a priority.

Modafinil use and seizures

28 year old gentleman
Works in big auditing firm
History from family - he had been working under high pressure at work with lack of sleep lately
1st GTCS at home, called ambulance
Another GTCS in ambulance, GCS 12, admitted directly to ICU
Given iv phenytoin
Denied any illicit drug use initially. No fever
Further questioning – he said he was using some kind of "body-building products/ vitamins/ private med"→ family asked to bring back packing
Urine toxicology from ICU – pending

Modafinil use and seizures

Switched to oral phenytoin 300mg nocte
LP → CSF WCC 4 TP- n, HSV/VZV PCR -ve
Further seizures 2 days later, possible NCSE – given LEV, tided over with sedation
CPK up to 49000
Family brought back some package which appeared to be medications from India and some vague words of "modafinil" and 30 tabs left behind
EEG- alpha rhythm only
MRI brain – no obvious features of encephalitis
Later urine toxicology – only phenytoin
Pt had a few days of visual/auditory hallucination
Later admitted that every he and his colleague will work overnight one night / month with modafinil bought on-line



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F8-T4
T4-T6
T6-O2
Fp2-F4
F4-C4
C4-P4
P4-O2
Fp1-F3
F3-C3
C3-P3
P3-O1
Fp1-F7
F7-T3

Modafinil use and seizures

Had liver derangement with PHT switched to GBP
Hep B/C neg and u/s abdo- n
Fleeting visual hallucination lasting a week
DDx – autoimmune encephalitis but pt subsequently improved
Oxford panel –ve
Urine toxicology -ve

6 months later – no seizure, LEV tapered off
12 months later – no seizure, GBP also tapered off

Case sharing – refractory epilepsy and amitriptyline abuse

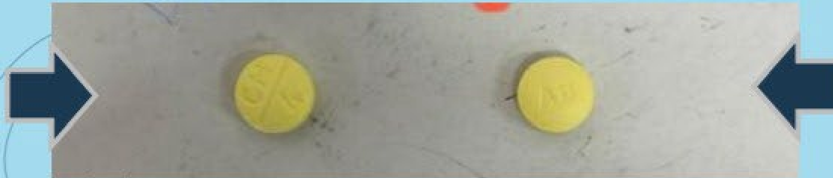
- 40 year old beautician
- Benzodiazepine dependence
- Amitriptyline abuse → cardiac arrests and other complications
- How did she get the amitriptyline – through father in pharmacy
- Many admissions a year for seizure, mostly associated with amitriptyline abuse
- Not easy to find out if the seizure was due to withdrawal of benzodiazepine or overdose of amitriptyline

Case sharing – refractory epilepsy and amitriptyline abuse

(con't)

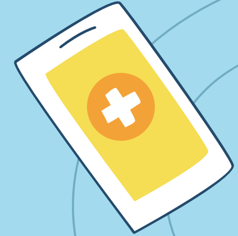
- Multidisciplinary care with psychiatrists and toxicologists
- Due to the seizures, the patient was often admitted to medical ward
- On gabapentin, pregabalin, topiramate, valproate
- Replacement benzodiazepine from psychiatry
- Strategies
  - Short follow-up to ration medications
  - Give her another "replacement" tablet
  - Urine testing every time for amitriptyline + pill count

Piriton, from hospital



Amitriptyline, from pharmacy

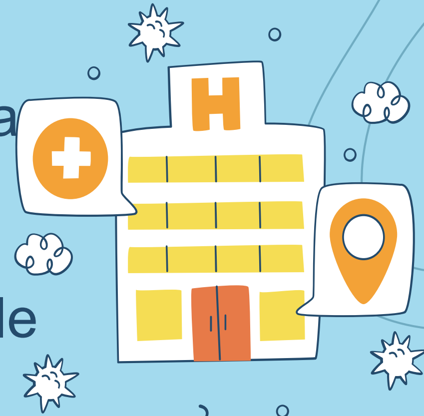
Case sharing – epilepsy developing long after the abuse has ceased



- 55 year old gentleman
- History of cough mixture abuse and intracranial haemorrhage ~10 years go
- Presented with GTCS and admitted to hospital
- Although there is no currently no more psychotropic drug abuse, a new onset epilepsy is diagnosed
- Started on phenytoin
- Remained seizure free but will likely require life-long medication.

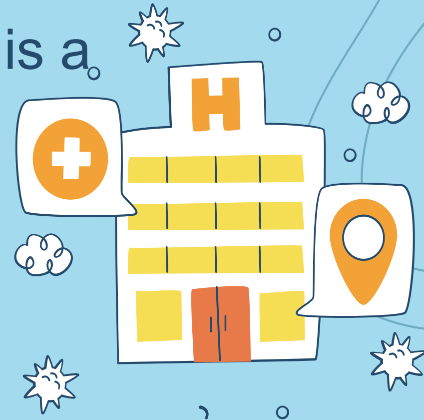
Implications for drug abusers

- Seizures and epilepsy exemplified the scope of medical burden due to psychotropic drug abuse.
- It gives us an important message in our drug campaign
- Withdrawal from sleeping pills is by far the most important form of seizure due to psychotropic drug abuse
- Drug abusers lie somewhere in the borderzone area between medical doctors and psychiatrists
- May occur in all walks of life
- Psychiatric comorbidity, social problems and multiple medical problems are common
- Family support is an important indicator for success
- Epilepsy can occur even after the abuse has ceased



Future directions

- Our project has consolidated the role of nurses in this campaign
- A medical coordinator may yet fulfill the service gap
- Innovative approach between neurology, psychiatry is needed
- Success in dealing with psychotropic drug abusers is a win-win situation for HA
- More community work is needed
- COVID has not stopped people from having drug abuse
- But innovative ways to deliver care during times of COVID are necessary



Thanks very much!

Thank
You