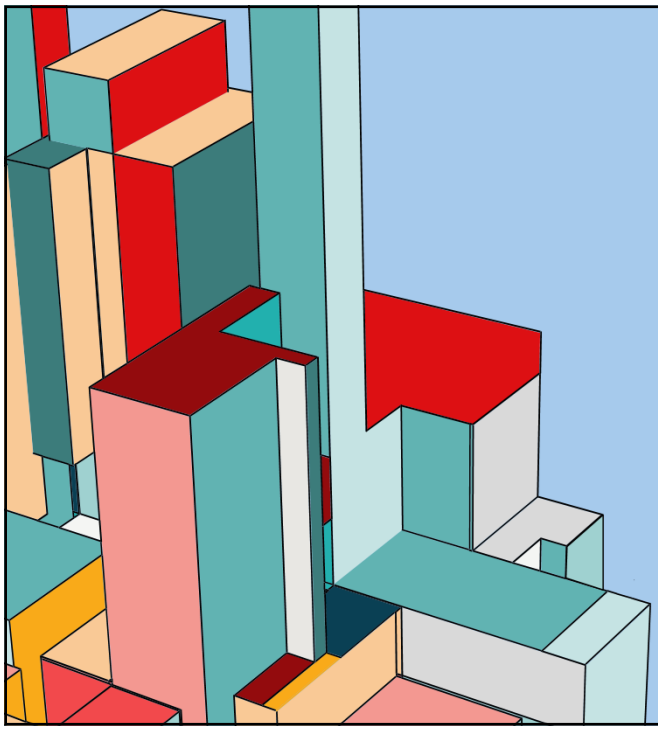


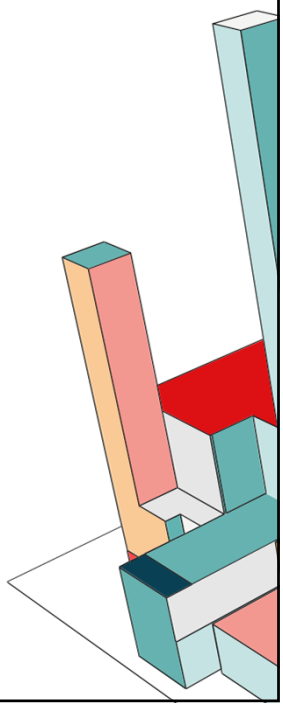
BDF project Experience Sharing Session:

Substance Misuse to Psychosis for Stimulants (SToP-S) – An Early Assertive Pharmacotherapy Intervention Study, BDF180059

Dr. Albert KK Chung
16 Jan 2026

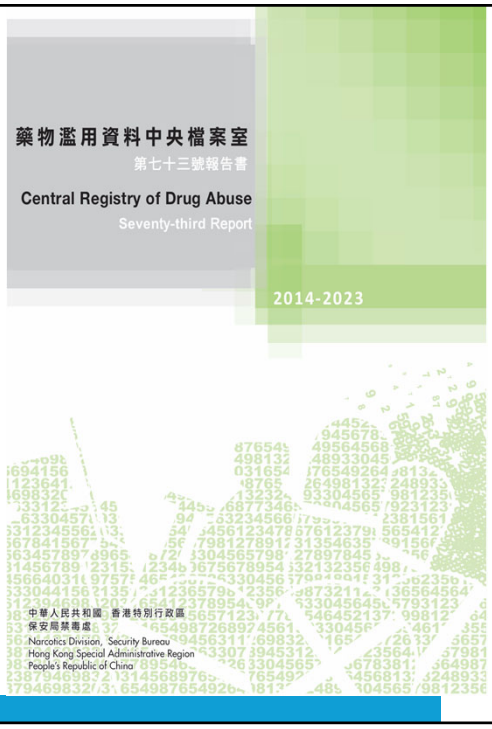
SToP Program
Substance misuse To Psychiatric disorders Program
精神物質濫用至精神疾病預治計畫

Contents



Introduction: local Hong Kong situation

STOP Program
Substance misuse To Psychiatric disorders Program
精神物質濫用至精神疾病預治計畫



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https://www.nd.gov.hk/en/index.html

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圖 2.2 被呈報吸食危害精神毒品及麻醉鎮痛劑者

Chart 2.2 Reported abusers of psychotropic substances and narcotics analgesics

註釋： 個別吸毒者在某年內可同時吸食麻醉鎮痛劑及危害精神毒品。

括號內的數字是指與前一年比較的變動百分比。

** 變動百分比在±0.5%以內

Notes : An individual abuser may take both narcotics analgesics and psychotropic substances during a given year.

Figures in brackets indicate the percentage change over the preceding year.

** Percentage changes within ±0.5%

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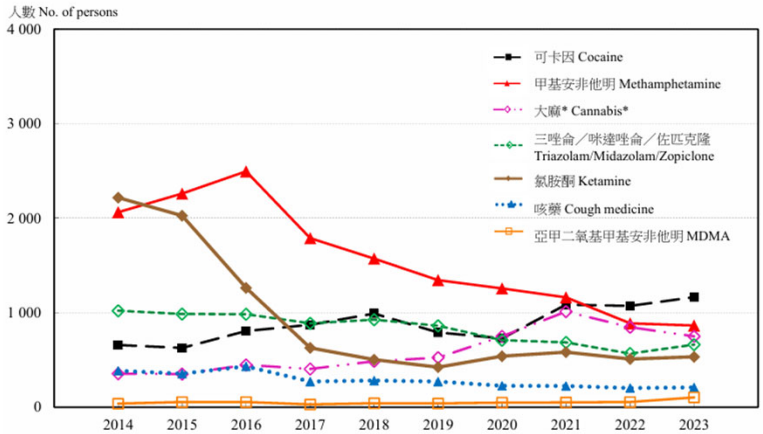
圖 2.5 被呈報吸食各種主要危害精神毒品者

Chart 2.5 Reported drug abusers of major types of psychotropic substances



註釋： 個別吸毒者在某年內可被呈報多於一種毒品。

* 自 2023 年起，大麻包括合成大麻素。

Notes : More than one type of drugs may be reported for an individual drug abuser in a given year.

* From 2023, cannabis includes synthetic cannabinoids.

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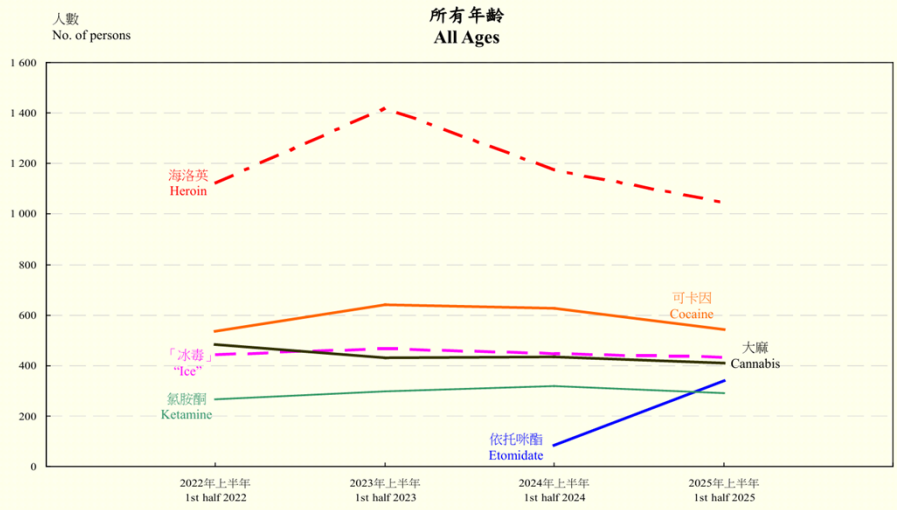
按年齡組別及常被吸食的毒品種類劃分的被呈報吸食毒品人士
(2022年上半年至2025年上半年)
Reported drug abusers by age group and common type of drugs abused (1st half 2022 to 1st half 2025)



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註釋： 因為某一被呈報吸食毒品者可吸食多於一種毒品，所以被呈報吸食不同毒品種類的人數不應加起來。
自2023年起，大麻包括合成大麻素。

Notes : Since a reported drug abuser may abuse one or more types of drugs, the numbers reported for abusing different drugs should not be added together.
From 2023, cannabis includes synthetic cannabinoids.

資料來源：藥物濫用資料中央檔案室
Source : Central Registry of Drug Abuse
資料更新於 09.10.2025
Updated on 09.10.2025

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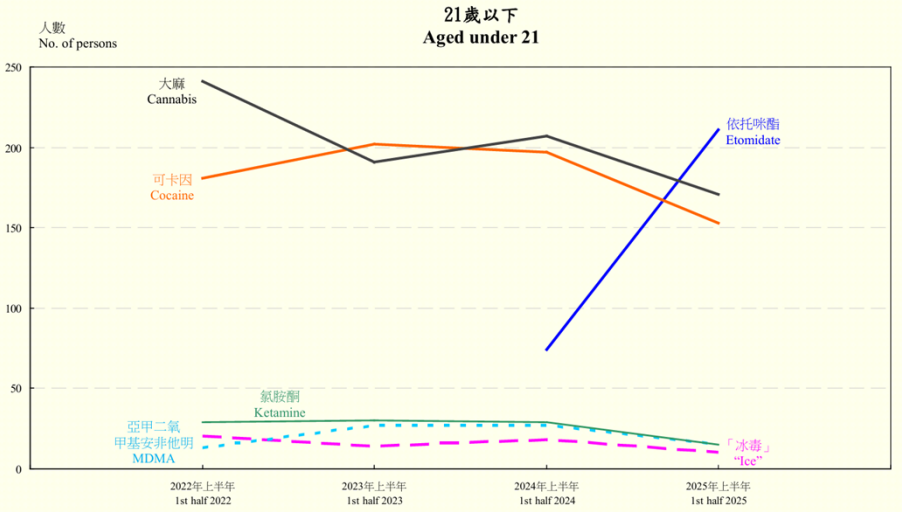

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Notes : Since a reported drug abuser may abuse one or more types of drugs, the numbers reported for abusing different drugs should not be added together.
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資料更新於 09.10.2025
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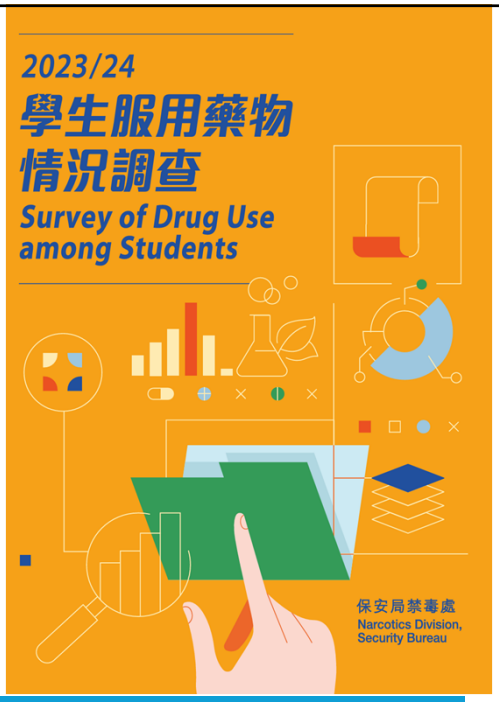

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表2.3　主要被吸食的毒品種類（按教育程度分組）（2020/21 年及 2023/24 年）

Table 2.3　Major types of drugs taken by education level, 2020/21 and 2023/24

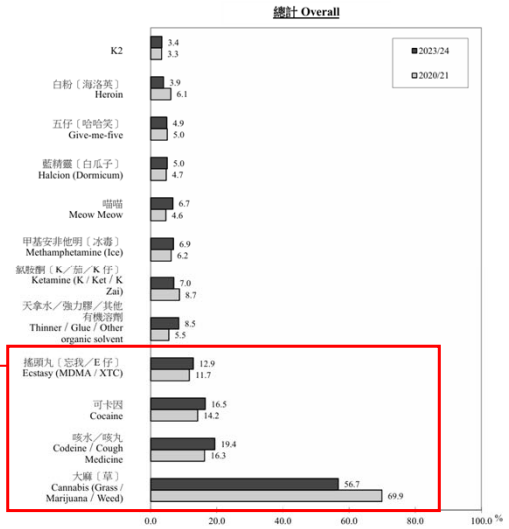
主要的毒品種類 Major types of drugs	總計 Overall		高小 Upper Primary		中學 Secondary		專上 Post-secondary	
	2020/21 (%)	2023/24 (%)	2020/21 (%)	2023/24 (%)	2020/21 (%)	2023/24 (%)	2020/21 (%)	2023/24 (%)
大麻〔草〕 Cannabis (Grass / Marijuana / Weed)	69.9	56.7	16.8	17.4	71.2	50.4	90.6	84.0
咳水／咳丸 Codeine / Cough Medicine	16.3	19.4	29.9	37.6	19.0	21.0	7.2	9.2
可卡因 Cocaine	14.2	16.5	13.8	11.5	16.3	20.0	11.8	12.7
搖頭丸〔忘我／E 仔〕 Ecstasy (MDMA / XTC)	11.7	12.9	12.1	8.8	12.1	13.1	11.0	14.4
天拿水／強力膠／其他有機溶劑 Thinner / Glue / Other organic solvent	5.5	8.5	11.7	16.0	5.5	8.8	2.9	5.0
氯胺酮〔K／茄／K 仔〕 Ketamine (K / Ket / K Zai)	8.7	7.0	10.4	11.7	9.3	6.2	7.2	6.5
甲基安非他明〔冰毒〕 Methamphetamine (Ice)	6.2	6.9	7.6	8.3	4.7	6.2	7.4	7.4
喵喵 Meow Meow	4.6	6.7	13.4	9.7	4.1	8.6	1.5	2.2
藍精靈〔白瓜子〕 Halcion (Dormicum)	4.7	5.0	8.8	5.9	4.2	6.5	3.5	2.1
五仔〔哈哈笑〕 Give-me-five	5.0	4.9	14.4	9.2	3.4	5.1	3.1	2.9
白粉〔海洛英〕 Heroin	6.1	3.9	8.7	7.7	5.4	3.1	5.9	3.7
K2	3.3	3.4	9.3	3.3	3.2	3.5	0.9	3.2

註釋：
1. 學生可選擇多過一個答案。
2. 百分比是以有提供相關資料的各教育程度的曾吸食毒品的學生為基礎而計算。

Notes:
1. Students were allowed to choose more than one answer.
2. Percentages are calculated based on students in the respective education levels who had ever taken drugs, and had provided the relevant information.

圖 2.4　主要被吸食的毒品種類（按教育程度分組）（2020/21 年及 2023/24 年）

Chart 2.4　Major types of drugs taken by education level, 2020/21 and 2023/24



註釋：
1. 學生可選擇多過一個答案。
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Notes:
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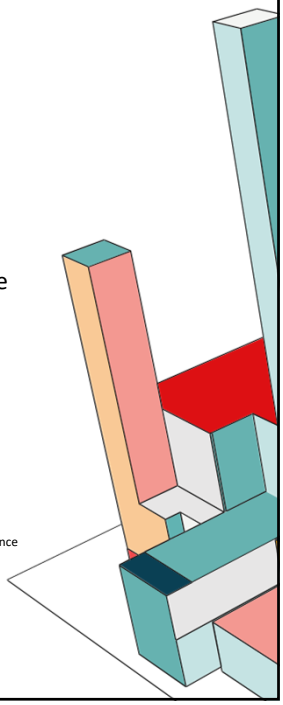
https://www.nd.gov.hk/pdf/survey_drug_use/2023-2024/FullReport.pdf

Stimulant

- Commonly used stimulants in Hong Kong: methamphetamine and cocaine
- Two local cross-sectional studies in Hong Kong revealed:
  - ➢ Methamphetamine:
    - 90% of participants (234/260) had *lifetime* methamphetamine dependence
    - 75.8% of participants had SCID-5 defined *lifetime* methamphetamine induced psychosis
  - ➢ Cocaine:
    - 97% of participants (252/260) had *lifetime* cocaine dependence
    - 71% of participants had SCID-5 defined *lifetime* cocaine induced psychosis

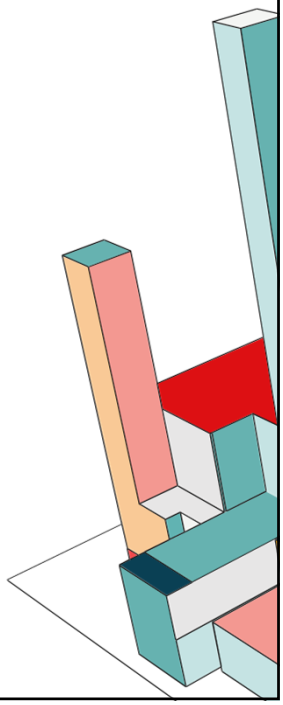
(WK Tang et al. 2020, Ice induced psychosis: a prevalence study in local ice abusers; WK Tang et al. 2022, Cocaine induced psychosis: a literature review and a prevalence study in local cocaine abusers)

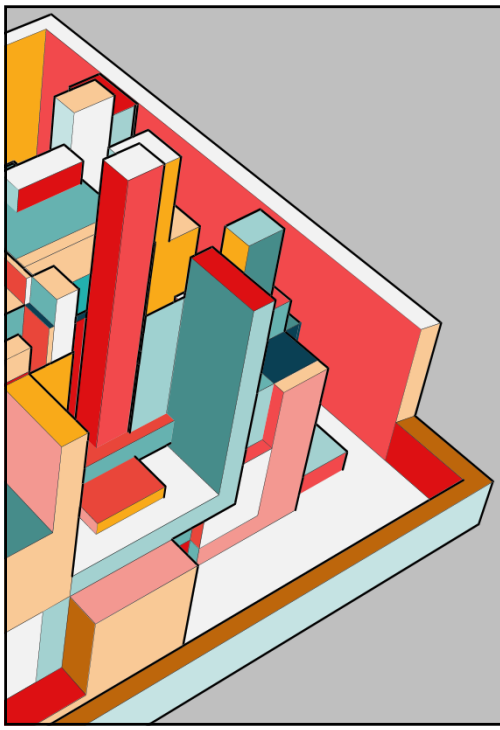


Stimulant

- Pharmacotherapy treatment:
  - ❖ **<u>no licensed medication</u>** for treating stimulant dependence and associated psychosis;
  - ❖ previous systematic review from 6 RCTs in 314 participants showed ***antipsychotics*** (aripiprazole, haloperidol, quetiapine, olanzapine and risperidone) helping to control ***amphetamine psychosis*** with *no superiority* to others

(Fluyau D, Mitra P, Lorthe K. Antipsychotics for Amphetamine Psychosis. A Systematic Review. Front Psychiatry. 2019 Oct 15;10:740. doi: 10.3389/fpsyt.2019.00740. PMID: 31681046; PMCID: PMC6804571.)





Pharmacotherapy for stimulant use and associated psychosis

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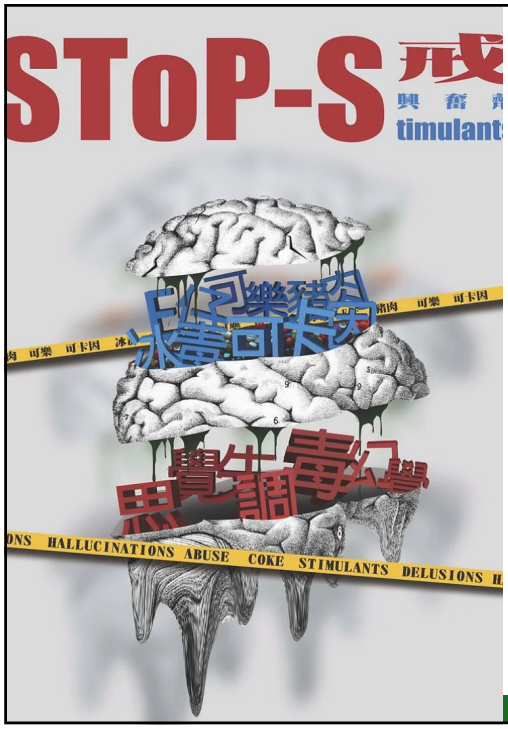


Substance misuse To Psychosis for Stimulants (STOP-S)

An early assertive pharmacotherapy intervention study

BDF180059

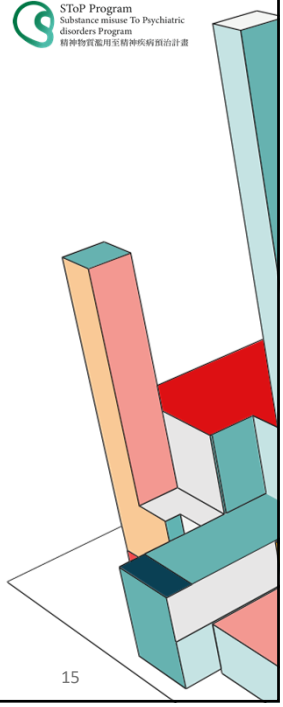
禁毒基金
BEAT DRUGS FUND

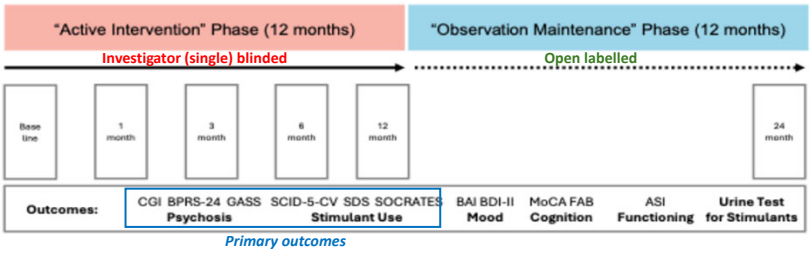
STOP Program
Substance misuse To Psychiatric disorders Program
精神物質濫用至精神疾病預治計畫

SToP-S

STop Program
Substance misuse To Psychiatric disorders Program
精神物質濫用至精神疾病預治計畫

- Objective: to investigate if early antipsychotic intervention using aripiprazole and paliperidone would improve the clinical outcomes in stimulant users with stimulant associated psychosis (SAP) and stimulant dependence as compared to TaU
- 3-arm, 24-month, 2-phase longitudinal prospective RCT comparing ***aripiprazole and paliperidone*** to ***treatment-as-usual*** **(TaU)**
  - *TaU*: any other antipsychotics or even no medication
- Inclusion criteria: 16-50 years old with DSM-5 defined stimulant use disorder (SUD) and SAP





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SToP-S

Results:

- 165 participants randomized with 14 participants only had baseline assessment
- Majority (68%) were males; mean age = 38.85 years
- All participants use methamphetamine and/ or cocaine
  - Majority had lifetime methamphetamine use (90.73% vs 58.94%)
  - Longer duration of methamphetamine use (125 months vs 79.32 months)
  - More recent methamphetamine use (68.89% vs 41.57%)
- The two-year conversion rate from SAP to schizophrenia was 4.8%

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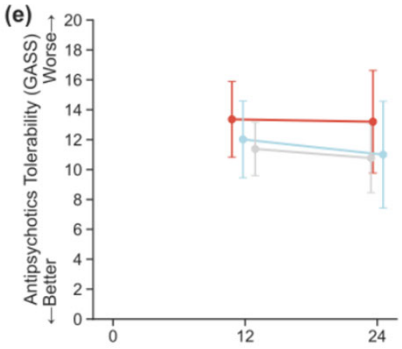
	Total (n = 151)	S1 aripiprazole (n = 38)	S2 paliperidone (n = 39)	S3 TaU (n = 74)
Male (%)	103 (68.21)	16 (42.11)	32 (82.05)	55 (74.32)
Age, Mean (SD)	38.85 (10.03)	34.08 (10.06)	40.15 (8.30)	40.61 (10.17)
Educational level (%)				
Primary or below	45 (29.80)	11 (28.95)	13 (33.33)	21 (28.38)
Secondary	87 (57.62)	23 (60.53)	19 (48.72)	45 (60.81)
Tertiary or above	19 (12.58)	4 (10.53)	7 (17.95)	8 (10.81)
Marital status (%)				
Single	75 (46.67)	25 (65.79)	18 (46.15)	32 (43.24)
Married	32 (21.19)	6 (15.79)	9 (23.08)	17 (22.97)
Divorced	44 (29.14)	7 (18.42)	12 (30.77)	25 (33.78)
Forensic History (%)	98 (64.90)	19 (50.00)	29 (74.36)	50 (67.57)
Smoker (%)	134 (89.93)	33 (86.84)	37 (94.87)	64 (88.89)
Drinker (%)	106 (70.20)	25 (65.79)	25 (64.10)	56 (75.68)
Drinking years, Mean (SD)	14.67 (12.84)	11.08 (11.39)	15.03 (13.14)	16.32 (13.18)
Psychiatric Services (%)				
In-patient	110 (72.85)	28 (73.68)	32 (82.05)	50 (67.57)
Out-patient	132 (87.42)	32 (84.21)	34 (87.18)	66 (89.19)
Number of all-cause hospitalizations, Mean (SD)	5.33 (6.80)	5.16 (4.37)	3.00 (1.63)	6.62 (8.93)
Detox center admission (%)	81 (53.64)	20 (52.63)	20 (51.28)	41 (55.41)
Methamphetamine Use (%)				
Lifetime use (%)	137 (90.73)	35 (92.11)	35 (89.74)	67 (90.54)
Active use in the past 3 months (%)#	93 (68.89)	18 (51.43)	28 (82.35)	47 (71.21)
Duration of use in months, Mean (SD)	125.05 (97.58)	119.62 (90.59)	102.59 (74.18)	139.41 (109.71)
Cocaine Use (%)				
Lifetime use (%)	89 (58.94)	29 (76.32)	18 (46.15)	42 (56.76)
Active use in the past 3 months (%)#	37 (41.57)	12 (41.38)	6 (33.33)	19 (45.24)
Duration of use in months, Mean (SD)	79.32 (86.09)	67.80 (77.19)	85.52 (77.08)	87.97 (93.51)
Lifetime use of both stimulants (%)	76 (50.33)	27 (71.05)	14 (35.90)	35 (47.30)
Lifetime use of other substances (%)				
Cannabis	111 (73.51)	31 (81.58)	25 (64.10)	55 (74.32)
Ketamine	92 (60.93)	28 (73.68)	20 (51.28)	44 (59.46)
MDMA	71 (47.02)	21 (55.26)	15 (38.46)	35 (47.30)
Zopiclone	62 (41.06)	15 (39.47)	18 (46.15)	29 (39.19)
Heroin	41 (27.15)	9 (23.68)	11 (28.21)	21 (28.38)
Nimetazepam	34 (22.52)	11 (28.95)	8 (20.51)	15 (20.27)
Midazolam	25 (16.56)	6 (15.79)	3 (7.69)	16 (21.62)
Methadone	22 (14.57)	31 (81.58)	3 (7.69)	55 (74.32)

Demographic characteristics and drug use history at baseline (n = 151).
Note. n: number of participants, SD: standard deviation, MDMA: methylenedioxymethamphetamine, ITT: intention-to-treat. # Not all participants provided data, thus the number of available observations was used as the denominator for percentage calculation.

SToP-S

Results:

- Mean oral-equivalent dosages over 24 months
  - Active intervention phase:
    - Aripiprazole: 15mg/day (2-30mg/day)
    - Paliperidone: 8.1mg/day (3-12mg/day)
  - Observation maintenance phase:
    - Aripiprazole: 15.5mg/day (5-30mg/day)
    - Paliperidone: 8.4mg/day (3-12mg/day)
- In TaU:
  - 20 participants received no medication throughout study
  - Varieties of antipsychotics: amisulpride, brexpiprazole, haloperidol, lurasidone, olanzapine, quetiapine, sulpiride, ziprasidone, trifluoperazine, clopixol
- 4 serious adverse events
  - Aripiprazole: 1 death (committed suicide 6-month post randomization)
  - Paliperidone: 2 cardiac complications (symptomatic AF at 3 months and prolonged QTc 472ms at 6 months) and 1 renal failure (at 6 months)
- No significant differences in GASS (tolerability) between 3 groups



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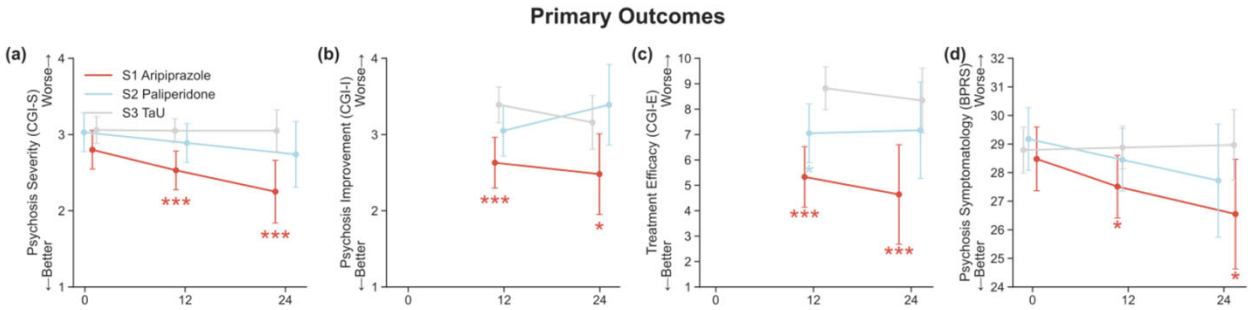
SToP-S results:



Differences in estimated marginal means in primary outcomes among three treatment arms for the ITT sample at primary (12-month) and secondary (24-month) endpoints. Asterisk denotes significant difference from the treatment-as-usual (TaU) group with * p < 0.05, ** p < 0.01, *** p < 0.001. Error bars represent 95% confidence interval. BPRS-24: 24-item Brief Psychiatric Rating Scale, CGI: Clinical Global Impression.

Aripiprazole demonstrated ***superior*** efficacy in managing ***stimulant associated psychosis*** than TaU at the primary endpoint (CGI-S -0.53 points, 95%CI -0.82 to -0.23, SMD -0.50; CGI-I -0.76 points, 95%CI -1.17 to -0.35, SMD -0.61; BPRS-24 -1.37 points, 95%CI -2.70 to -0.04, SMD -0.23), with these differences maintained at similar level at the secondary endpoint.

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STоP-S results:

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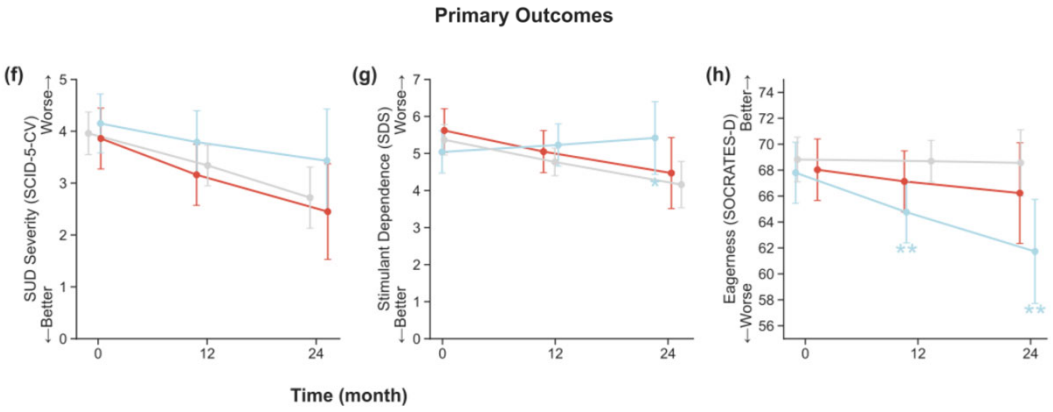
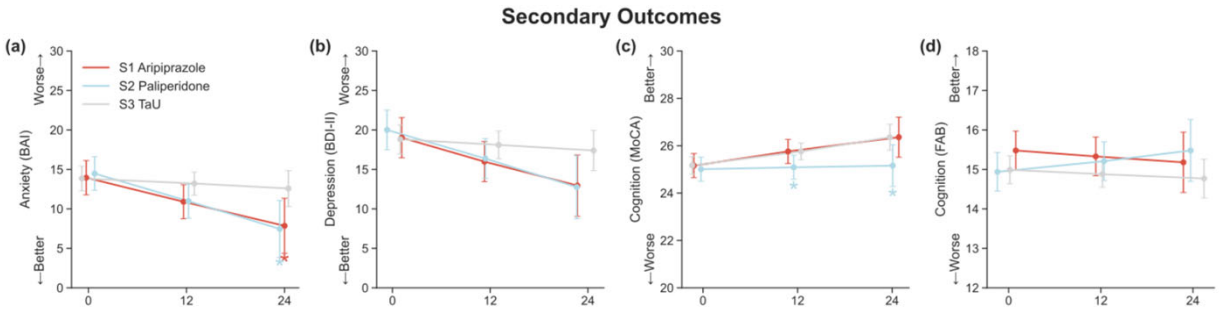


Paliperidone worsened stimulant dependence, ***change readiness and treatment eagerness*** by secondary endpoint.
(SDS 1.26 points, 95%CI 0.10 to 2.42, SMD 0.40; SOCRATES-D -6.84 points, 95%CI -11.60 to -2.80, SMD -0.39)

Differences in estimated marginal means in primary outcomes among three treatment arms for the ITT sample at primary (12-month) and secondary (24-month) endpoints. Asterisk denotes significant difference from the treatment-as-usual (TaU) group with * p < 0.05, ** p < 0.01, *** p < 0.001. Error bars represent 95% confidence interval. SCID-5-CV: Structured Clinical Interview for DSM-5 Disorders – Clinician Version, SDS: Severity of Dependence Scale, SOCRATES-D: Stages of Change Readiness and Treatment Eagerness Scale-Drug.

STоP-S results:



Differences in estimated marginal means in secondary outcomes among three treatment arms for the ITT sample at primary (12-month) and secondary (24-month) endpoints. Asterisk denotes significant difference from the treatment-as-usual (TaU) group with * p < 0.05, ** p < 0.01, *** p < 0.001. Error bars represent 95% confidence interval. BAI: Beck Anxiety Inventory, BDI-II: Beck Depression Inventory-II, FAB: Frontal Assessment Battery, MoCA: Montreal Cognitive Assessment.

Paliperidone showed significantly ***worse MoCA*** assessed global cognitive function than TaU

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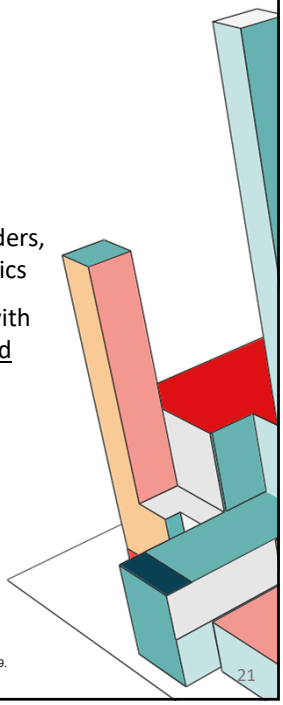
Manuscript in preparation

Conclusions

- Antipsychotics might be helpful in lowering the conversion rate of stimulant associated psychosis to schizophrenia (4.8% vs 10-22%*) in stimulant user with stimulant use disorder
- In treating stimulant associated psychosis in individuals with stimulant use disorders, aripiprazole might have superior efficacy than other commonly used antipsychotics
- When using paliperidone treating stimulant associated psychosis in individuals with stimulant use disorders, potential negative impacts on stimulant dependence and global cognitive function should be carefully monitored



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*Murrie B, Lappin J, Large M, Sara G. Transition of Substance-Induced, Brief, and Atypical Psychoses to Schizophrenia: A Systematic Review and Meta-analysis. Schizophr Bull 2020; 46: 505–16.; Niemi-Pynttäri JA, Sund R, Putkonen H, Vorma H, Wahlbeck K, Pirkola SP. Substance-Induced Psychoses Converting Into Schizophrenia: A Register-Based Study of 18,478 Finnish Inpatient Cases. J Clin Psychiatry 2013; 74: e94–9.

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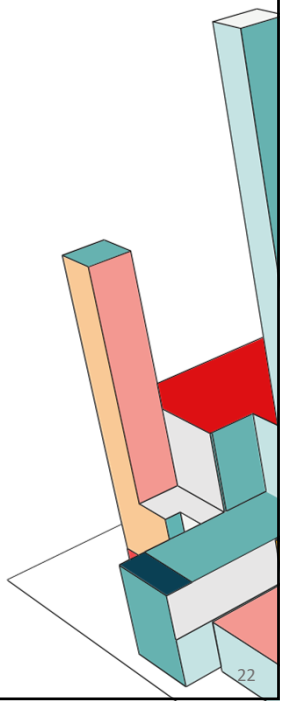
Future Direction

- ??Serotonin-dopamine stabilizing agents (e.g., brexpiprazole, cariprazine) with more balanced dopamine-serotonin MoA might be even better for stimulant use disorder and associated psychosis??



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Thank you!

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Q & A

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