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A Review of New Psychoactive Substances in Secure Mental Health Settings

Summary document

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1. Introduction

New Psychoactive Substances (NPS) are a group of drugs that are designed to replicate the effects of other illegal substances. People use them for experimental, recreational purposes and some may become dependent on them. NPS usually fall into one of the following four categories: Synthetic cannabinoids (SC), Depressants, Stimulants, and Hallucinogens. They present a challenge due to the significant variation in substances and perceptions of legal status.

Due to the increase of NPS use in secure environments Public Health England (PHE) and partners have developed a toolkit providing information about NPS use in secure custodial settings. This provides information on the extent of use of NPS and how this can be effectively managed.

The NHS England Mental Health Programme of Care Board identified the need for a similar review on the impact of NPS in secure mental health settings. PHE have led this review on behalf of the board. This document summarises the outputs of the review and makes recommendations and next steps for the management of NPS use in secure mental health settings.

2. Methods

In order to conduct this review an NPS Working Group was convened. The terms of reference for the group are included as Appendix 1. The remit for the group was to provide strategic direction for the review across organisations involved in the commissioning and provision of secure mental health and substance misuse services. The review itself consisted of two main elements; a questionnaire to service providers and an evidence review.

NPS Service Provider Questionnaire

A questionnaire was used to gain a more robust estimation on the scale of the impact of NPS for secure mental health settings. The aim was to develop an understanding of what support might be useful for the management of NPS in secure mental health settings. The questionnaire gathered information on the prevalence of people using NPS and related clinical symptoms alongside the wider impact of NPS in care settings.

The questionnaire was developed with input from the NPS Working Group, and this group was used to validate the content of the questionnaire prior to circulation. An online link to the questionnaire was circulated via commissioning networks to secure mental health units between 6th January and 21st February 2017. A copy of the questionnaire is included within Appendix 2.

Responses to the completed questionnaires were collated. Descriptive analysis was undertaken for the quantitative responses and thematic analysis was undertaken for the responses to the qualitative questions.

NPS in Secure Mental Health Setting Evidence Review

An evidence review was conducted to identify published literature that would summarise impact NPS use is having on secure mental health settings; both in terms of the scale of the problem (prevalence of NPS use) and the clinical and managerial impact this has on services. A systematic literature search of peer reviewed publications was conducted, the details of the search strategy are included within Appendix 3.

Once papers were identified through the search strategy the titles, abstracts and full texts were screened for relevance and those remaining papers meeting the search criteria were included within the evidence review.

Thematic analysis was conducted for the papers included in the review to identify the key areas for discussion. The outcomes of the included papers were also considered against the primary and supplementary research questions.

Results

Results from the Questionnaire Feedback

66 units responded to the questionnaire representing a total of 1781 current patients. The recorded prevalence of current NPS use within the units that responded was relatively low (1.1%), however the reported prevalence of use by patients prior to admission to the unit was higher (12.1%). Details of the prevalence by unit type can be found in Appendix 2. Regarding the impact of NPS use on cause of admission 44 of the 66 units responding reported that they had at least one patient in the past 12 months where NPS was a causal or contributory factor for admission. Synthetic cannabinoids were the most commonly reported NPS in use, followed by stimulants. Reported use of depressants and hallucinogens were much lower. Two thirds of those recorded as using NPS were also recorded as using at least one other illicit substance.

Regarding the symptoms associated with NPS use, the most frequently associated physical symptoms were cardiovascular symptoms, reduced consciousness, dizziness and vomiting. The most frequently associated psychological symptoms were psychosis, anger, aggression and paranoia.

Across the 66 units that responded, 14 reported that they had required an emergency response to assist with NPS use in the last 12 months; this represented 52 reported incidents. Reasons for these acute responses were related to emergency treatment for NPS induced physical and psychological symptoms such as collapse, cardiovascular symptoms and acute exacerbations of existing mental health conditions.

Regarding the wider impact of NPS on the culture within mental health settings units reported the following challenges; impacts on staff resources, trading and exploitation, perception of those using NPS by non-users, violence, ability to test for NPS and impact on leave. Additional challenges noted by the units were; bullying and safeguarding, concerns about impacts on treatment and concerns about the impact on the physical health of service users.

Respondents to the questionnaires identified the following areas where they feel they could benefit from additional support to improve the management of people using NPS; staff training, service user information, testing for NPS, information on specific substances, additional national guidance and opportunities to share learning with other units.

Evidence Review Results

24 papers met the search criteria for inclusion in the evidence review. However the quality of the study types available was limited to case reports, clinical audits and case note audits (n = 10), with only 2 systematic literature reviews meeting the search criteria. Therefore the validity of the finding and generalisability of the results in practice are limited. The review was however able to identify a number of themes relevant to the impact of NPS in secure mental health services. A detailed summary of results of the evidence review is included in Appendix 3.

The results from the review indicate that NPS can induce psychiatric symptoms in those with no prior mental health diagnosis and can exacerbate symptoms in those with existing serious mental illness. This may translate to an impact on admissions and care in secure mental health settings, including longer inpatient stays. However, due to the small number of studies available further research may need to be undertaken to determine the population wide impact of NPS induced mental illness, in particular the longer term impacts on mental health.

The findings from the review recommend that clinicians, specifically those in emergency department and acute mental health settings, are aware of the potential for NPS to induce mental health symptoms and how this can be diagnosed and treated.

The evidence in the included studies was limited with regards to mechanisms for the effective management of people using NPS in secure mental health settings. Overall the papers included within this study did not adequately address this question. This is an area that would benefit from further primary research, specifically in relation to non-pharmacological methods for management and whether this differs from treatment for other illicit substances.

The findings from the review indicate that patients should be educated about the psychological and other harms of using NPS and a culture of self-reporting of NPS use should be fostered in order to assist treatment.

This evidence review has highlighted that, perhaps due to the emerging nature of the subject, limited evidence is available in this field. Further research would be recommended to better address the research question.

3. Conclusions

The feedback from the questionnaire has confirmed that NPS use is an issue that affects secure mental health units, both with regards to current use within the units and as a potential contributing factor for admission to the units. This potential for NPS to be a contributing factor for admissions to the unit is supported by published literature.

The evidence review identifies that further information needs to be provided about the acute psychological symptoms associated with NPS use. Both for clinicians to ensure appropriate diagnosis and treatment and members of the public so that they are informed of the risks associated with NPS use.

Feedback from service providers also indicates that psychological and physical symptoms associated with NPS use have an impact on the care of service users, in particular in relation to staffing resources and the management of acute incidents. Units have reported challenges in relation to being able to identify those using NPS and tensions between users and non-users within the unit. Issues have also been identified in relation to financial exploitation, allocation of leave, interference with treatment and safeguarding of vulnerable patients. The outputs from the evidence review also support that NPS use may have an impact on the physical health of those in secure mental health care.

Further research would be beneficial to determine the impact of NPS use on secure mental health settings and to recommend evidence based methods for management of associated psychological symptoms.

4. Recommendations

The following recommendations are made from the outputs of this review:

- There is a need for additional guidance and training on the management of people using NPS specifically in secure mental health settings. This should build on the **existing guidance developed for prisons by PHE**, which has been subject to **national evaluation**. Guidance for secure mental health units should include: identification of those using NPS, information on the types of NPS in circulation, information on symptoms associated with NPS use and withdrawal from NPS and information on how to manage people with acute reactions to NPS.
- There is a need to develop information resources about the risks associated with NPS use for service users within secure mental health settings. These should be in a format appropriate to service users.
- There is a need to educate wider clinical staff, including emergency department staff, about the acute mental health symptoms associated with NPS use.
- Mechanism for testing for NPS use within secure mental health settings should be explored to understand the impact this would have on identification and management.
- Mechanisms to share best practice on the management of NPS use should be facilitated between secure mental health units.
- As evidence related the impact of NPS for mental health services is an emerging field additional research would be welcomed in a number of areas. Findings from this review have identified the following as potential primary research questions:
 - Has the use of NPS led to an increase in mental health prevalence at a population level?
 - Does the use of NPS lead to the development of chronic mental illness?

- Have NPS induced psychiatric symptoms led to an increase in activity in secure mental health settings?
- What are the recommended treatment options for NPS use in secure mental health settings? (to include supportive and pharmacological approaches to treatment)

5. Next steps

The NHS England Mental Health Programme of Care Board and Adult Secure Clinical Reference Group have agreed the following actions to develop the recommendations detailed in this report:

- To share the recommendations for further research with NIHR contacts within Clinical Reference Groups.
- Convene a stakeholder event for Autumn 2017. The event would aim to:
 - Share the findings of this report;
 - Share the findings of existing work undertaken in prisons where knowledge would be transferrable to a secure mental health setting;
 - Allow staff to share best practice examples between mental health units;
 - Begin to develop a package of training and guidance for the management of NPS use in secure mental health settings.

Appendix 1: Terms of Reference New Psychoactive Substances in Secure Mental Health Settings Working Group

Aims

The aims of this group, a partnership between PHE and NHS England (NHSE), are:

- To describe the prevalence of NPS use in secure mental health settings.
- To understand the number of admissions to secure mental health settings where NPS use is a causal or contributing factor.
- To understand the issues faced by staff in the management of NPS use in patients in secure mental health settings including secure Child and Adolescent Mental Health Services (CAMHS).
- To summarise the evidence related to the effective management of NPS use in secure mental health settings.
- To inform current guidance on the management of NPS use in secure mental health settings.
- To disseminate evidence related to the effective management of NPS in secure mental health settings to commissioners and providers of the service.

Terms of Reference

The group will lead a review on the scale of impact and management of NPS in secure mental health settings. This will include:

- Assessing the current situation regarding the management of NPS in secure mental health settings to identify the nature of policies and extent to which these are implemented effectively. This will be done through the use of surveys and qualitative interviews.
- Quantifying the prevalence of NPS use in all secure mental health settings; low, medium and high secure including CAMHS. The review will consider the impact of NPS on the whole pathway of care for this population group including referral into the service and impacts for onward care.
- Reviewing the latest available published data (if relevant) on the management of NPS in secure mental health or comparable settings, and make recommendations on areas for further research.
- Disseminating the existing evidence on effective interventions and information on prevalence through the development of a NPS toolkit that can be used by commissioners and providers of secure mental health services.

- Using understanding gained from the evidence reviews to initiate next steps, with the intention of providing supportive materials for secure mental health commissioners and providers in promoting an NPS free environment, supporting staff in understanding their roles in supporting people who use NPS and facilitating effective services to manage the wider impact of NPS in secure MH settings.
- Providing a summary report to the Mental Health Programme of Care Board

Membership

In order to undertake this review a working group will be convened with clinical and operational expertise. The membership of the group is in development.

Frequency of meetings

Monthly, from November 2016.

Reporting and Governance

The group will report to the NHSE Programme of Care Board for Mental Health

Appendix 2: A Review of New Psychoactive Substances in Secure Mental Health Settings: Questionnaire Feedback

Method

A questionnaire was used to gather information from services to provide a more robust estimation on the scale of the impact of NPS for secure mental health settings. This questionnaire aims to gather information on the prevalence of people using NPS and related clinical symptoms alongside the wider impact of NPS in care settings to understand what support might be useful for secure mental health settings.

An online questionnaire was circulated to secure mental health units between 6th January and 21st February 2017. A copy of the questionnaire is included following the conclusions of this appendix.

Responses to the completed questionnaires were collated. Descriptive analysis was undertaken for the quantitative responses and thematic analysis was undertaken for the responses to the qualitative questions.

Results

Responses by Setting

66 responses to the questionnaire were received in total. These comprised of ; 37 from a low secure setting, 15 from a medium secure setting, 5 from a forensic unit and 9 from a CAMHS setting. 0 responses were received from high secure mental health settings. The responses represented a total of 1781 current patients.

Prevalence of NPS Use

11 of the 66 units that responded to the questionnaire reported one or more service users currently using NPS. However prevalence within these units was low with a total of 20 patients across all units reported to be current users. The prevalence by unit type is shown in Table 1 below:

	Low Secure	Medium Secure	Forensic Unit	CAMHS	Total
Total patients	807	666	192	116	1781
Number recorded as current NPS users	10	2	4	4	20
Current NPS Prevalence (%)	1.24	0.3	2.08	3.45	1.12

Table 1: Current recorded prevalence of NPS use by unit type

However, the number of current patients recording as using NPS prior to admission was higher. Overall 218 patients (12%) were recorded to be using one or more NPS prior to admission to the unit. Table 2 shows the prevalence of NPS use prior to admission by secure mental health unit type:

	Low Secure	Medium Secure	Forensic Unit	CAMHS	Total
Total patients	807	666	192	116	1781
Number recorded as using NPS prior to admission	94	100	11	10	218
Prevalence of NPS use prior to admission (%)	11.63	15.02	5.73	8.62	12.07

Table 2: Recorded prevalence of NPS use prior to admission by unit type

In the last 12 months 40 of the 66 units that responded reported that at least one patient had been admitted with NPS as a causal or contributory factor for admission. This equated to 105 patients in total; 37 for low secure, 52 for medium secure, 10 for forensic and 6 for CAMHS settings.

Sources of admission for those using NPS

Admission routes for those using NPS were reported by unit. The most common source of admission for those currently using NPS was from another mental health unit (33 patients) followed by a prison setting (24 patients), a community setting (13 patients) and another hospital setting (4 patients).

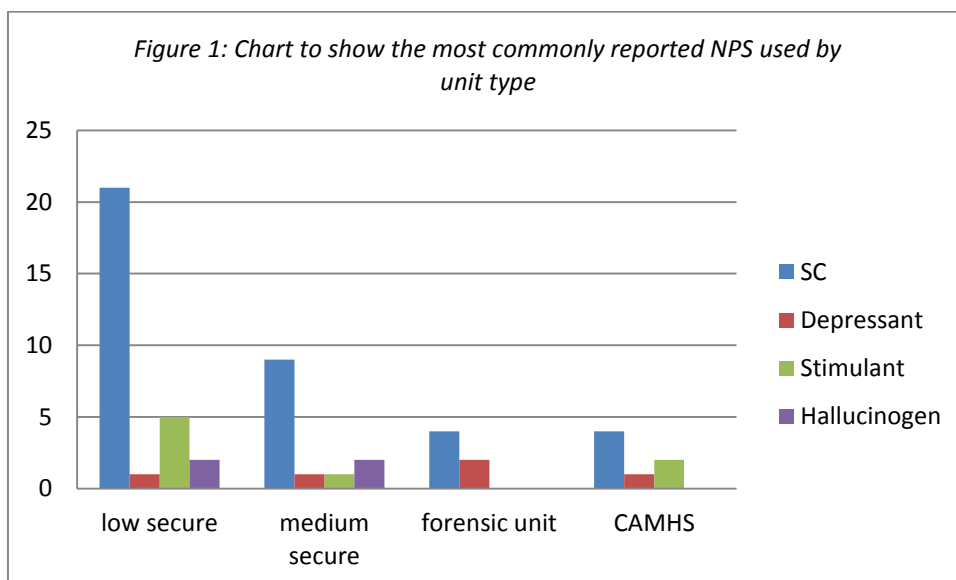
Types of Substance Used

The types of NPS used were reported by unit. In total 46 units reported some use of synthetic cannabinoids (SC), 12 reported some use of depressants, 31 reported some use of stimulants and 11 reported some use of hallucinogens. Table 3 below shows the breakdown of reported NPS used by unit:

Unit type	NPS type			
	Synthetic Cannabinoid	Depressant	Stimulant	Hallucinogen
Low Secure	26	4	16	4
Medium Secure	10	3	8	5
Forensic Unit	4	3	3	0
CAMHS	6	2	4	2
Total	46	12	31	11

Table 3: Recorded NPS usage by unit type

The most common type of NPS used was reported by unit. Figure 1 below shows the most prevalent NPS used reported by unit type. For all units synthetic cannabinoids were reported as the most prevalent NPS in use.



In terms of specific NPS used the most commonly recorded NPS used across the units was Spice (a synthetic cannabinoid) followed by; Black Mamba (a synthetic cannabinoid), Ketamine (a depressant) and magic mushrooms (hallucinogens). Other specifically named substances included: Clockwork Orange and Cotton Candy Carnage (synthetic cannabinoids); Barry White, Rave, GoGaine, Blow, Mcat, Methamphetamine, Meow Meow, MDMA (stimulants) and LSD (a hallucinogen).

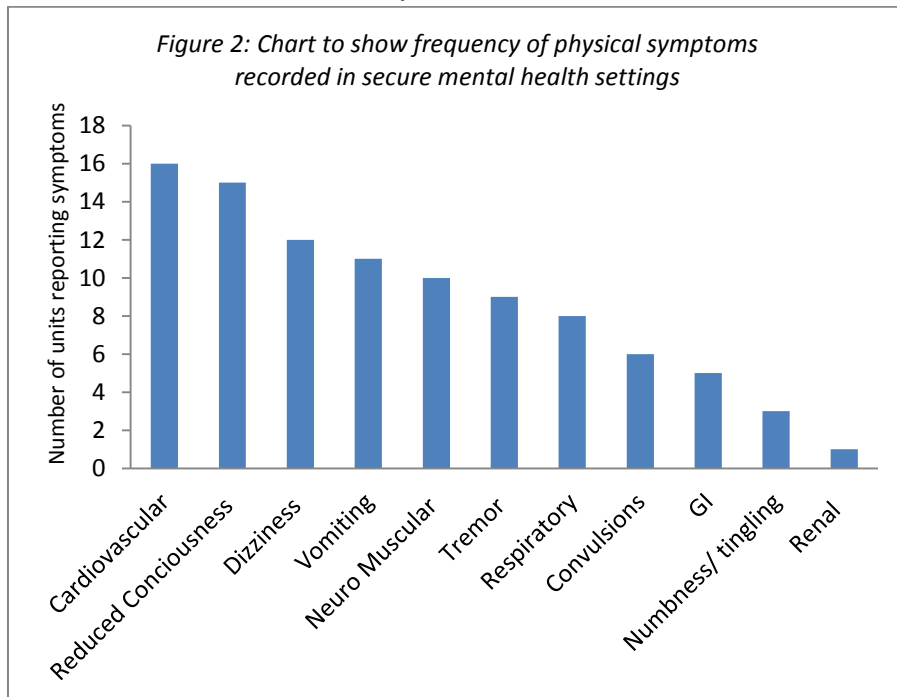
Poly-substance use

Of those recorded to be using NPS in a secure mental health setting 66.4% were also reported as using another illicit substance. Prevalence of dual use was highest in a CAMHS setting (78.6%) followed by medium secure settings (72.5%), forensic units (66.7%) and low secure settings (58.7%). Cannabis was the most commonly reported substance used alongside NPS followed by cocaine, amphetamines, heroin, crack and other unspecified substances.

Clinically relevant symptoms and incidents

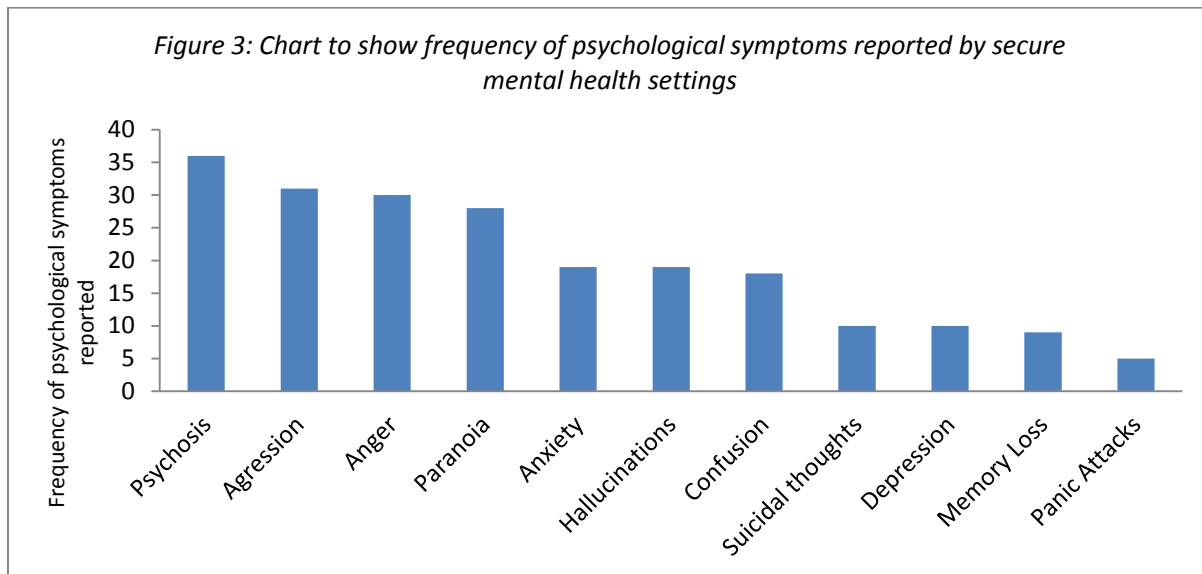
Physical Symptoms Linked to NPS Use

Cardiovascular symptoms were the most frequently reported physical symptom to be associated with NPS use, followed by reduced levels of consciousness, dizziness, vomiting and neuro-muscular symptoms. Figure 2 below shows the frequency of physical symptoms associated with NPS use reported in secure mental health settings.



Psychological Symptoms Linked to NPS Use

Psychosis was the most frequently reported psychological symptom to be associated with NPS use, followed by aggression, anger, paranoia, anxiety and hallucinations. Figure 3 below shows the frequency of psychological symptoms associated with NPS use reported in secure mental health settings.



Acute Response to NPS Use

14 of the 66 secure mental health units reported the need for urgent clinical care related to NPS use in the last 12 months, this related to a total of 52 incidents. For the units that provided information on the type of response required reports were given on the need for ambulance attendances and acute hospital admissions to manage physical symptoms such as loss of consciousness and respiratory symptoms related to NPS use.

“One young person reacted badly to the substance she started convulsing and her lips started turning blue. The second young person had an increase in paranoia, an increased pulse rate and feelings of tightness in his chest. First Aid was given and paramedics were called. The young people were then placed on 15 minute observations on the advice of the ambulance crew.”

“Patient collapsed in bathroom and hit head requiring assessment in hospital – twice”

“Service users have collapsed and become unconscious on many occasions requiring physical observations and emergency intervention.”

Additional feedback for units reporting acute incidents related to NPS were linked to exacerbations of psychological conditions including acute management of anger and aggression on the unit.

“The unit has used open seclusion beds to manage and monitor service users under the influence of NPS. The unit has used seclusion to manage violent, threatening and aggressive behaviour relating to NPS use on the unit and related deterioration of mental health.”

“Signs of relapse of acute mental illness, agitation and aggression towards staff also paranoid thoughts.”

Withdrawal symptoms associated with NPS use

8 of the 66 units reported that one or more patients experienced withdrawal symptoms from NPS in the last 12 months. Physical symptoms that were associated with NPS withdrawal included: nausea, vomiting, sweating and tremors. Psychological symptoms that were associated with NPS withdrawal included: aggression, insomnia, irritability, anxiety, psychosis, paranoia and hallucinations.

Wider Impact of NPS on the Unit

Impact on the culture between patients on the unit

Units reported a number of different areas where they felt the use of NPS may have had an impact on culture within the mental health setting. These included:

- Perceived impact on allocation of staffing resources

“Those who don’t use become angry and frustrated with those who use due to the disruption on the ward and that more nursing time is taken up by those who use.”
“Other patients being verbally abusive to the user as they were taking all the staff time, either being restrained in the bedroom or cleaned as they had soiled it.”

- Impact on leave from the unit

“Pressure on patients with unescorted leave to import drugs on behalf of others without leave.”
“There appeared to be an increase in tension between peers, this was the result of the intense observations required after patients had returned from AWOL under the influence of illegal substances, which had a detrimental effect on other patients accessing their leave and engaging in their therapeutic program.”

- Trading and Exploitation

“We have experienced dealing and supply issues among service users incurring debt and causing tension on the unit.”
“NPS has been brought onto the unit and shared with others, including one patient who was not previously a substance abuser. There can be a culture of intimidation to obtain money from vulnerable patients to obtain NPS.”

- Perception of the risks associated with NPS use

“There is concern regards patients who may have not previously used illicit substances in the community and using these due to the label of 'legal high' which is confusing for people.”
“These substances are often (and mistakenly) believed to be harmless, which again may encourage some of the patients to use them instead of other drugs.”

- The perception of those using NPS by non-users within the unit.

“Young people became very wary of the young person who brought the drugs on to the unit; the young person wanted to discharge herself and did not want any assistance with her drug use.”
“There have been issues of grassing and suspicion between patients.”

- Violence within the unit and impacts on security

“Patients have had to be moved due to risk and subverting security. Tense atmosphere linked to unpredictability of behaviour - impacting on staff and service users”
“Retrospective review of care reveals more number of violent incidents in the ward and increased disengagement following use of psychoactive substances.”

- Impact on ability to test for NPS on the culture

“The relative difficulty in testing ie longer result times, undermines monitoring procedures.”
“Many patients appear to believe that urine tests cannot detect any of the NPS (despite we actually have dedicated tests in the unit), which potentially increases the risks of some of them using such drugs.”

- However a number of units reported no current impact on culture due to NPS. This was reported to be due to either NPS use not being prevalent in the unit or mitigating action taken by the unit such as education on the impact of NPS.

“This has not been a prevalent issue this year due to education around the impact of NPS”
“NPS don't seem to have affected the culture of the unit.”

Other challenges that NPS use may have presented on the unit

Respondents reported a number of other challenges that NPS have presented to secure mental health units. The key themes for these challenges included:

- Increased incidents of violence and aggression caused by NPS use.

“Its use increases levels of violence/intimidation towards staff.”
“Physical assaultive behaviour, verbal challenges towards staff and other patients”

- Issues of bullying and safeguarding for vulnerable patients.

“Intimidation of more vulnerable residents to import substances.”
“There has been an increase in bullying type behaviours where ward based patients tend to pressurize patients with leave by asking them to bring in contraband items”.

- Security Issues

“Breaches of security (including use of drones).”
“We have in the past had an issue with young people asking friends to bring in NPS and also making arrangements with a dealer to deliver NPS in the grounds.”

- Concerns related to the difficulty in identifying those using NPS.

“Difficulties with testing make risk management difficult as residents even when clearly clinically effected deny use.”
“Inability to detect NPS using standard drug services even sophisticated ones. Restriction of leave when NPS use/trading has been established but also when it has been suspected, leading to patients declaring unfair treatment.”

- Issues related to debt and financial exploitation

“Patients with leave periods have in the past been known to charge extortionate amounts of money in order to bring in illicit substances.”
“The young person in question denied that she was in any drug debts but did admit that she has slept with older men in order to obtain drugs.”

- Exacerbation of mental health conditions and interference with treatment

“Interference of psychoeducational therapies.”
“At times prescribed medication may have needed to be withheld due to the unknown effects of the substance they had taken.”

- Impacts on staffing resources on the units

“Increased staffing required due to 1:1 interventions to monitor physical health, NPS related seclusions and dealing of substances on the unit.”
“Patients would present in a challenging unpredictable manner often requiring higher levels of staff support.”

- Concerns about the impact of NPS on the physical health of service users

“Separated smoking areas and smoke times, removal of tobacco and NRT management to manage and prevent unconsciousness and risk to life.”
“There is also the risk of seizures/other physical health complications from NPS this has previously impacted on our ability to make the best use of resources as we have had to undertake high risk escorts to acute hospitals for physical health assessment.”

Management of people using NPS

22% of respondents reported that they have a protocol in place for the treatment of people using NPS. The proportion of units with a protocol in place varied by unit type, protocols were in place for; 25% of low secure, 31% of medium secure, 25% of forensic and 13% of CAMHS units.

Regarding the specific aspects of NPS management overall 44% of units reported they had treatment plans in place for people using NPS and 28% of units reported that they had plans in place to manage the withdrawal of people using NPS.

Table 4 below shows the point at which NPS use is reported as being recorded by secure mental health unit type.

Unit type	On admission to the unit	During clinical review	Following ad-hoc discussions with patients	On suspicion of symptoms	Not routinely recorded
Low secure	27	23	19	27	1
Medium secure	13	10	11	10	0
Forensic unit	3	2	4	4	0
CAMHS	9	6	4	3	0
Total	52	41	38	44	1

Table 4: Methods for recording NPS use by unit type

Table 5 below shows the treatment that is currently available for people identified as using NPS by unit type.

Table 5: Treatment offered for the management of people using NPS by unit type.

Unit type	Psychosocial interventions	Symptom focussed care	Clinical interventions	Reduction support	Relapse prevention
Low secure	22	12	15	7	22
Medium secure	9	6	7	4	8
Forensic unit	4	3	2	1	3
CAMHS	3	2	3	0	3
Total	38	23	27	12	36

Additional information and support identified by secure mental health settings in relation to NPS.

The following themes were identified by respondents as areas where additional support may be required regarding the management of people using NPS.

- Information and training for staff

“Update on NPS. All clinical personnel should be aware of this problem”
“Greater education about the different forms of NPS and the symptoms to look out for. As a unit that has experienced fairly minimal problems with NPS over the last 12 months, some form of further training would be useful for members of staff. For instance, regional training on - prevalence, symptoms, signs, immediate management, and a collaborative approach to prevention.”
“Advice relating to medical management of specific NPS, in particular with reference to acute symptomatology following use, and management of withdrawal.”

- Information for service users

*“Easy read patient information for patients with learning disability”
 “Information on possible clinical interventions and leaflets for patients (and staff) on effects and dangers associated with NPS use.”*

- Identification of people using NPS and testing.

*“Ability to test patient’s urine/blood locally but also cost effectively.”
 “Whether there are screening kits available to act as a deterrent.”
 “Accurate, rapid, comprehensive drug screening to make it easier to identify patients taking NPS.”*

- Further information on specific substances

*“Names and types of any products new to the market to enable monitoring by staff”
 “Hard to keep up with compounds, up to date information would be welcome.”
 “A regular update on what substances are currently in circulation and any changes or new substances.”*

- National guidance to support the management of NPS in secure mental health settings.

*“Guidance as to what we should be providing.”
 “Medical guide to emergency treatment of symptoms of NPS use/overdose”
 “Any new guidelines for the management of NPS abuse as distinct from other illicit substance abuse.”*

- The opportunity to share good practice and learning between mental health units and other agencies.

*“Exemplars of policies, protocols, care plans that address NPS use”
 “Would be good to know how other areas are managing NPS use within their services - issues, ways of identifying use- Patients tricks for hiding, obtaining NPS on units- Best treatment options identified.”
 “Networking with other specialist agencies that have more information regarding NPS.”*

In addition to the key themes identified by the respondents to the questionnaires further comments were raised regarding:

- Perceived reduction in NPS use since the introduction of the Substance Act.
- Legal avenues for responding to NPS related incidents
- Suggestions for a government strategy to address the distribution of NPS.
- Further research into the risks associated with NPS use

Discussion

Overall recorded prevalence of NPS use within secure mental health settings remains relatively low, but reported prevalence of use prior to admission is much higher. The majority of units who responded to the questionnaire (44/66) reported that they had at least one patient in the last 12 months with an admission that was related to NPS use. This demonstrates that NPS use is an issue relevant to secure mental health settings and one that could be having an impact on the overall number of people admitted to the units.

With regards to the type of substance used in secure mental health settings, synthetic cannabinoids were the most commonly reported NPS followed by stimulants. Reported use of depressants and hallucinogens were proportionally lower. Higher reported use of synthetic cannabinoids was reported across all types of secure mental health setting. It is important to note that prevalence of NPS use alongside other illicit substances was high across all types of secure mental health setting, with two thirds of NPS users reporting as using other illicit substances.

For symptoms attributed to NPS use psychological symptoms were more frequently reported than physical symptoms. Over half of units reported patients using NPS had experienced drug induced psychosis and nearly half of units reported patients had experienced anger, aggression and paranoia as a result of NPS use.

One fifth of units reported the need for at least one acute response in relation to NPS in the last 12 months. The majority of these responses were related to acute physical problems but responses were also required for exacerbations of psychological conditions. Physical and psychological problems associated with NPS withdrawal were reported by 12% of units.

In terms of impact of NPS use on the culture of the unit the most common issues reported related to: impact on staffing resources, trading and exploitation, violence and impact on security, impact on leave from the unit, tensions between those who use NPS and those who don't, and perception of risk associated with NPS use. Other challenges reported by the units in relation to NPS use included; violence and aggression, safeguarding, security, debt, issues related to testing and identifying those using NPS, interference with treatment and impact on the physical health of users.

Regarding the management of NPS use only around a fifth of units reported having a protocol in place for the treatment of people using NPS, however over two fifths reporting having NPS treatment plans in place.

The main areas where secure mental health units requested further support regarding the management of NPS use were; staff training, service user information, testing for NPS, information on specific substances, additional national guidance and opportunities to share learning with other units.

Conclusions

The feedback from the questionnaire has confirmed that NPS use is an issue that affects secure mental health units, both with regards to current use within the units and as a potential contributing factor for admission to the units. Synthetic cannabinoids are the most commonly used type of NPS but other substances are also in use. It is important to note that the majority of NPS users in mental health settings also use other illicit substances.

Psychological and physical symptoms associated with NPS use have an impact on the care of service users, in particular in relation to staffing resources and the management of acute incidents. Units have reported challenges in relation to being able to identify those using NPS and tensions between users and non-users within the unit. Issues have also been identified in relation to financial exploitation, allocation of leave, interference with treatment and safeguarding of vulnerable patients.

New Psychoactive Substances Questionnaire

1. Setting					
1.1 Name of the setting					
1.2 Name of the person completing the questionnaire					
1.3 Date questionnaire completed	//	1.4 Number of beds in the unit			
1.5 Type of setting	CAMHS <input type="checkbox"/>	High Secure <input type="checkbox"/>	Medium Secure <input type="checkbox"/>	Low secure <input type="checkbox"/>	Forensic unit <input type="checkbox"/>
2. Prevalence					
2.1 How many patients are currently on the unit ?					
2.2 How many people currently on the unit are recorded to be currently using NPS?					
2.3 How many people currently on the unit were recorded to be using NPS prior to admission?					
2.4 In the last 12 months how many people admitted to the unit had NPS recorded as a causal or contributory factor for admission?					
2.5 Please specify the sources of admission for those patients using NPS (please tick. More than one option can be chosen)					
Another mental health unit	<input type="checkbox"/>	Prison	<input type="checkbox"/>	Community	<input type="checkbox"/>
Other (please specify)					
2.6 What types of NPS are used? (Please tick. More than one option can be chosen)					

Synthetic Cannabinoids <input type="checkbox"/> eg Spice, Black Mamba	Depressants <input type="checkbox"/> e.g GHB, GBL, Ketamine	Stimulants <input type="checkbox"/> eg Mcat, Meow- Meow, MDMA	Hallucinogens <input type="checkbox"/> eg LSD, Magic Mushrooms,	Other <input type="checkbox"/>
2.7 Which is the most common type of NPS used? (please specify)				
2.8 Of those using NPS what number of patients are recorded as using other illegal substances?				
2.8a. Please specify the other illegal substances used:				
3. Clinically relevant symptoms and incidents				
3.1 Please indicate any clinically relevant physical symptoms that have been recorded as a result of NPS:				
Cardiovascular symptoms <input type="checkbox"/>	Renal symptoms <input type="checkbox"/>	Gastro-intestinal symptoms <input type="checkbox"/>	Convulsions <input type="checkbox"/>	
Neuromuscular symptoms <input type="checkbox"/>	Numbness / tingling <input type="checkbox"/>	Reduced levels of consciousness <input type="checkbox"/>	Hyperglycaemia/hypoglycaemia <input type="checkbox"/>	
Respiratory symptoms <input type="checkbox"/>	Dizziness <input type="checkbox"/>	Tremor <input type="checkbox"/>	Vomiting <input type="checkbox"/>	
Other (please specify)				
3.2 Please indicate any clinically relevant psychological symptoms that have been recorded as a result of NPS:				
Anxiety <input type="checkbox"/>	Memory loss <input type="checkbox"/>	Psychosis <input type="checkbox"/>	Depression <input type="checkbox"/>	Anger/Aggression <input type="checkbox"/>
Suicidal thoughts <input type="checkbox"/>	Confusion <input type="checkbox"/>	Panic attacks <input type="checkbox"/>	Paranoia <input type="checkbox"/>	Hallucinations <input type="checkbox"/>
Other (please specify)				
3.3 Has the unit had any emergency incidents in the last 12 months related to NPS where additional urgent clinical care was required? (please tick)				Yes <input type="checkbox"/> No <input type="checkbox"/>
If yes please specify:				
a) The number of incidents:				
b) The nature of incidents and the response that was required eg acute clinical care				

3.4 In the last 12 months has anyone on the unit experienced any physical or psychological symptoms as a result of withdrawal from synthetic cannabinoids?	Yes <input type="checkbox"/> No <input type="checkbox"/>
If yes, specify; symptoms experienced, severity of symptoms and frequency.	
4. Wider impact of NPS on the unit	
4.1 Please detail any impact you feel that the use of NPS might have had on the culture between patients within your setting:	
4.2 Please detail any other challenges that the use of NPS may have presented in relation to providing care in the unit (eg assaults, debt, bullying)	
5. Management of people using NPS	
5.1 Does the unit have a protocol for the treatment of people using NPS? (please tick)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

5.2 At what point is NPS use recorded? (please tick, more than one option may be ticked)			
On admission to the unit <input type="checkbox"/>	During clinical review <input type="checkbox"/>	Use not routinely recorded <input type="checkbox"/>	Other <input type="checkbox"/>
Following ad-hoc discussions with patients <input type="checkbox"/>		On suspicion of symptoms <input type="checkbox"/>	
5.3 Are treatment plans in place for people using NPS? (please tick)			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
5.4 Does the unit have plans in place to manage withdrawal of people using NPS? (please tick)			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
5.5 What treatment is currently available for people identified as using NPS? (please tick)			
Psychosocial interventions <input type="checkbox"/>	Symptom-focussed care <input type="checkbox"/>	Clinical interventions <input type="checkbox"/>	Reduction support <input type="checkbox"/>
Relapse prevention <input type="checkbox"/>	Other (please specify)		
5.5 What additional information would the unit find useful to assist with the management of people using NPS?			

Thank you for completing the questionnaire.

Please return the questionnaire to sarahsmith30@nhs.net by 21/02/2017

Appendix 3: An Evidence Review of New Psychoactive Substances in Secure Mental Health Settings

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Updated: Not applicable

Prepared by: Sarah Smith on behalf of NHS England Specialised Commissioning

1. Introduction

New Psychoactive Substances (NPS) are a group of illicit substances which are increasing in use in the UK and across Europe. This rise, coupled with links to significant physical and psychological comorbidity, has led to NPS being a growing concern for public services in recent years ^{1,2}.

Previously referred to as “legal highs” these NPS are now controlled under the Misuse of Drugs Act 2016 ². They are substances that often mimic other controlled substances through stimulation or depression of the central nervous system ¹. NPS are categorised into four main subgroups; synthetic cannabinoids, stimulants, depressants and hallucinogens. In practice there are many types of NPS available which are often distributed in ways to evade detection and legal prohibition such as being marketed as bath salts, research chemicals or plant food. Due to the vast number of NPS in circulation and the different methods for circulation including via the internet it is often difficult for healthcare professionals to keep up to date with the specific types of substances in use. This, in addition to perceptions around legality of the substances poses a significant problem for health and justice systems ¹.

In 2015/16 2,042 individuals presented to substance misuse treatment services for NPS in England, whilst this was a 77% increase on the previous year it still only represented 1.5% of all presentations ³. The proportion of young people accessing the same services for NPS in 2015/16 was higher at 6% this again was an increase from the previous year ⁴.

In secure settings the proportion of those accessing services for treatment for NPS use was higher than in the community with 6% of adults and 8% of young people in treatment reporting NPS as a problem substance ⁵. As with all the figures for those accessing treatment this only represents the proportion of those using the substances who are seeking treatment; the prevalence of use is likely to be much higher.

The negative physical and psychological effects of NPS have been widely documented and include acute cardiovascular and respiratory symptoms, altered levels of consciousness, agitation, psychosis, hallucinations and in some cases death ⁶. Due to the acute nature of the NPS related reactions people are most likely to attend acute settings such as emergency departments. However NPS use may also present longer term health problems such as renal damage and health issues associated with dependence where users may present at primary care or mental health settings ^{1,2,6}.

Aims and Objectives

This review aims to summarise information on the impact NPS use is having on secure mental health settings; both in terms of the scale of the problem (prevalence of NPS use) and the clinical and managerial impact this has on services.

The review also aims to summarise effective interventions that aim to reduce the scale and the impact of NPS use in mental health settings. This may include interventions that can be implemented in clinical practice in addition to larger scale policy interventions.

Evidence review questions:

Primary research question;

- What is the impact of NPS use on secure mental health settings and the people accessing those settings?

Supplementary research questions:

- Is there a causal link between NPS and mental health conditions?
- Has the use of NPS caused an increased number of people being admitted to secure mental health settings?
- What is the most effective way of treating people in secure mental health settings who are users of NPS?

2. Summary of results

The 24 papers identified for inclusion in this evidence review highlight a number of themes related to the impact on NPS in secure mental health services.

The results from the review indicate that NPS can induce psychiatric symptoms in those with no prior mental health diagnosis and can exacerbate symptoms in those with existing serious mental illness. This may translate to an impact on admissions and care in secure mental health settings. The findings from the review recommend that clinicians are aware of the potential for NPS to induce mental health symptoms and how this can be diagnosed and treated. The findings also indicate that patients should be educated about the psychological and other harms of using NPS and a culture of self-reporting of NPS use should be fostered in order to assist treatment.

This evidence review has highlighted that limited evidence available in this field and further research would be recommended to better address the research question.

3. Method

A systematic literature search of peer reviewed publications. As the subject matter is relatively new the search terms were purposefully broad in order to generate sufficient papers for review. Search terms with derivatives of New Psychoactive Substances and mental health were used. The search strategy for this evidence review is detailed in Section 9 of this document.

The following databases were searched: PubMed, The Cochrane Library, Elsevier, and Embase. The title and abstract fields were included in the search. No restrictions were made on date or country of publication.

Once papers were identified through the search strategy the titles were screened for relevance, duplicate papers and those not meeting the inclusion criteria were excluded. The abstracts were then screened and those not meeting the inclusion criteria at this stage were excluded. Finally full text reviews were completed and any remaining papers not meeting the inclusion criteria were excluded. The remaining papers were included within the evidence review.

Thematic analysis was conducted for the papers included in the review to identify the key areas for discussion. The outcomes of the included papers were also considered against the primary and supplementary research questions.

4. Results

Literature Review Results

Through the literature search 19 papers were identified for inclusion in this evidence review. 2 additional papers were identified through feedback from other professionals working in the field. 3 additional papers were identified through Public Health England's internal peer review process. Due to the emerging nature of the subject matter the volume of relevant published literature was low and papers identified were relatively new (2010 - 2017). The majority of the papers included were individual case reports (n = 7), followed by review papers (n = 5), clinical audits (n = 3), case reports (more than one case) (n=2), retrospective audits of case notes (n = 2), systematic reviews (n=2), qualitative studies (n= 1), surveys (n=1), and epidemiological studies (n=1).

Where stated in the included studies the age profile of the participants tended to be younger adults, ranging from 20 – 30 years in the individual case reports to mean ages of between 15.4 years and 40 years in the studies with larger sample sizes. Where sex was reported in the studies the proportion of males was higher than the proportion of females.

Regarding the types of NPS considered within the included studies 5 papers considered multiple NPS types and did not limit the study to a specific substance or group of substances, 12 papers considered synthetic cannabinoids, 2 considered depressants (ketamine like substance and

Benzylglycinamide), 4 papers considered stimulants (mephadrone and ethylphenidate) and no papers solely considered hallucinogenic substances. 1 paper did not specify the NPS under study.

Where the settings for the studies were stated (n = 15) the majority related to inpatient mental health settings (n=9), followed by emergency department attendances (n= 6), community settings (n = 2) and a prison setting (n = 1).

With regards to the mental health status of subjects within the included studies 10 reported NPS induced symptoms on subjects with no pre-existing mental health conditions; 4 reported on NPS exacerbating existing mental health conditions and 10 papers reported on both the onset of symptoms in previously undiagnosed patients and the exacerbations of existing conditions.

Summary of results relating to research questions

What impact does NPS use have on secure mental health settings?

The papers included within this evidence review were able to partly address this research question. The included papers were able to indicate the impact NPS may have on inducing psychological symptoms and exacerbating existing symptoms ^{7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 20, 21, 23, 24, 25, 27, 28, 29, 30}. The papers also give an indication of potential physical comorbidities that may affect those using NPS in secure mental health settings ^{13, 23, 24}.

Another area the included studies may add insight is related to the emergency hospital care those with NPS induced acute psychological symptoms may receive prior to admission to a secure mental health unit ^{8, 10, 11, 12, 13, 17, 18, 20}. This review also considers evidence on treatment options for the management of acute psychiatric symptoms associated with NPS use ^{10, 14, 26}.

Supplementary Research Questions

Is there a causal link between NPS and mental health conditions?

The studies identified in this review appear to indicate a link between certain NPS and acute onset of psychological illness. Symptoms including; psychosis, anxiety, aggression, agitation, catatonia and hallucinations were reported as being attributable to NPS within subjects with no prior mental health diagnosis ^{7, 8, 9, 10, 11, 12, 13, 14, 18, 20, 21, 23, 25, 27}. Further research may be needed to determine the longer term mental health effects of NPS use and whether NPS use could lead to the development of chronic mental health conditions.

Has the use of NPS caused an increased number of people being admitted to secure mental health settings?

A number of the papers included in this review reported emergency hospital admissions to psychiatric wards following acute onset of psychological symptoms following NPS use ^{8, 9, 14, 17}. However due to the small sample sizes in the included papers, this limits the applicability in practice. The included studies do not provide an indication of the population wide impact on admissions to secure mental health units where NPS use was a causal or attributable factor.

What is the most effective way of treating people with mental health conditions who are users of NPS?

The evidence in the included studies was limited with regards to mechanisms for the effective management of people using NPS in secure mental health settings. Recommendations for pharmacological support were considered in three papers ^{14, 22, 26} and methods for supportive treatment were considered in two papers ^{22, 26}. Overall the papers included within this study did not adequately address this question. This is a question that would benefit from further primary research specifically in relation to non-pharmacological methods for management and whether this differs from treatment for other illicit substances.

Thematic Analysis:

To consider the key themes covered in this review analysis was undertaken detailing themes discussed in two or more included research papers. The key themes that arose from the review are detailed in figure 1 below.

5. Discussion

5.1 Principal Findings of the Evidence Review

Papers identified through this evidence review highlight a number of themes that indicate the impact NPS use may have on secure mental health settings. The findings of this review allow the impact to be considered in terms of: NPS inducing mental health conditions, exacerbation of psychiatric symptoms, the emergency response to those presenting with NPS induced mental health conditions, the impact of NPS on the management of secure mental health service users, pharmacological and supportive treatment for NPS use, the impact of other substances in addition to NPS and policy initiatives and the impact on NPS induced mental health.

NPS induced mental health conditions

NPS use was cited in a number of studies as being a causal factor for inducing psychosis in addition to other mental health symptoms including; agitation, insomnia, catatonia, anxiety, aggression, hallucinations and suicidal ideation. Generally these symptoms were reported through clinical presentation in an acute setting combined with a patient reported history of NPS use. In three studies the biomechanical mechanisms for the acute psychotic response to NPS was also identified which supports evidence indicating that NPS use can act as a causal factor for mental health symptoms.

The NPS induced psychiatric symptoms reported were generally acute symptoms for those with no pre-existing mental health condition. In some cases these NPS induced symptoms were reported to lead to wider issues such as self-mutilation and criminal behaviour.

Admission to secure psychiatric care was required for the ongoing management of symptoms in some cases with NPS induced mental health conditions. This may indicate a potential impact on future activity, both in terms of volumes of people requiring mental health admissions and the type of care that would be required. However due to the numbers of available studies being low and the sample sizes in the included studies being relatively small, more research is required to better understand the population level impact of NPS induced mental health conditions on admissions to secure mental health settings.

The acute response to NPS induced psychiatric symptoms

The papers included in this study indicated that the emergency department is a likely route of presentation for those with NPS induced psychiatric symptoms. This has implications for those working emergency department both in terms of diagnosing and treating those with mental health symptoms which may be induced by NPS.

Studies included in this review recommend that emergency department staff should be aware of the potential of NPS to induce psychiatric symptoms and to understand which psychiatric symptoms might be more commonly associated with different groups of NPS.

Clinicians should understand that different classifications of NPS require may present with different symptoms and require different mechanisms for assessment and management.

This is a particularly important issue for NPS use compared to other illicit substances as, due to the emerging nature of the substances, many may not appear on drug screening tests. Therefore the studies recommend that clinicians should be aware that NPS use may be a causal factor for acute mental health presentations where people presenting appear to be under the influence of an illicit substance but present with a negative drug screen.

The included studies recommend that emergency department clinicians should be educated about the treatment options available for NPS induced psychosis including supportive and pharmacological treatment.

Emergency department staff should be conscious of the potential of outbreaks of NPS induced psychosis where multiple patients attend with similar symptoms, reporting using the same NPS.

The impact of NPS on the management of those in secure mental health settings

The included studies also report that NPS can exacerbate the psychiatric symptoms of those with existing serious mental health conditions. Therefore healthcare professionals working in mental health settings should be aware of the psychiatric symptoms associated with NPS use in units where use is confirmed or suspected. These symptoms may include increased psychosis, anger, aggression and violence which may pose a challenge for the management of patients in secure mental health settings. NPS use may also be associated with a longer length of inpatient stay. Further research would be required to determine if this is an issue that is perceived in practice. Staff should also be aware of the potential for psychiatric effects from the withdrawal of NPS.

Due to the challenges with testing for specific substances mental health staff should encourage a culture of self-reporting of NPS use in secure mental health settings to ensure management is appropriate.

Mental health professionals should also be aware of the physical symptoms associated with NPS use as this may impact on those using NPS who are under their care. Staff should be made aware of both acute physical symptoms such as loss of consciousness in addition to longer term physical health problems associated with use such as bladder complications.

Mental health professionals should be aware of the pharmacological and supportive treatment options for NPS use in those with existing mental health conditions. Due to the limited evidence in this field identified by this review further research would be welcomed in this area specifically related to how treatment options for NPS use interact with treatment for existing serious mental illness.

Policy initiatives for NPS that impact on mental health

One paper identified a link between the decreased retail availability of NPS and decreased presentations of those with NPS related mental health symptoms. This suggests that if policy initiatives and legislation were able to limit NPS supply this may have an impact on reducing NPS related activity in mental health services.

Another included paper discussed the potential use of social media surveillance related to NPS terms as a potential early warning system for health professionals. This may be an area that could be explored further to give mental health settings an indication of potential increases in activity linked to NPS induced psychiatric symptoms.

Another area highlighted through the review which may have an impact on secure mental health settings was the recommendation to increase public and patient awareness on the health consequences of using NPS. Specifically around the mental health impacts of specific substances.

Evidence Review Limitations

As NPS use and the impact on mental health is a relatively emerging topic, the quantity of available evidence was limited. The quality of evidence that was available was also limited to case reports, clinical audits and case note audits (n = 13), with only 2 systematic literature reviews meeting the search criteria. Therefore the validity of the finding and generalisability in practice is limited. The review however was able to identify a number of key themes from the included studies which were relevant to the primary research question and recommend further areas where additional research would be beneficial.

Recommendations for future research:

As evidence related the impact of NPS for mental health services is an emerging field additional research would be welcomed in a number of areas. Findings from this evidence review have identified the following as potential primary research questions:

- Has the use of NPS lead to an increase in mental health prevalence at a population level?
- Does the use of NPS lead to the development of chronic mental illness?
- Have NPS induced psychiatric symptoms led to an increase in activity in secure mental health settings?
- What is the prevalence of NPS use in secure mental health settings?
- What are the recommended treatment options for NPS use in secure mental health settings? (to include supportive and pharmacological approaches to treatment)

What impact does the use of NPS have on clinical management in secure mental health settings?

Conclusion

This evidence review has identified some areas where NPS use may have an impact on secure mental health settings both in terms of the potential impact of increased mental health prevalence induced by NPS and the impact of NPS use of those under secure psychiatric care.

The review indicated that NPS can induce mental health symptoms which can require admission to secure mental health services, and NPS users may require longer inpatient stays. It also raises the importance of emergency staff and secure mental health staff being aware of the psychiatric symptoms associated with NPS use to ensure appropriate diagnosis and treatment.

At policy level public and patient education on the mental health impacts of NPS is recommended to ensure people are aware of the risks of use.

Further research would be beneficial to determine the impact of NPS use on secure mental health settings and to recommend evidence based methods for management of associated psychological symptoms.

7. Evidence Summary Table

Study reference	Study Design	Population characteristics	New Psychoactive Substance(s) included	Setting	Results relating to mental health outcomes	Conclusion summary	Applicability in practice
Stevenson and Tuddenham (2014)	Individual Case report	Male aged 20-30 years, n = 1	3-methoxyphencyclidine (3-MeO-PCP), and methylenedioxypropyl amphetamine (MDPV) An analogue of methoxetamine, a Ketamine like substance.	Community.	No pre-existing mental health condition. NPS induced psychosis.	MDPV can lead to NPS induced psychosis. Symptoms in this case lasted 6 weeks. The case attempted murder whilst under the influence of NPS.	NPS use can induce psychosis. There may be criminal implications for actions taken by those under the influence of NPS.
Anderson et al (2015)	Individual Case report	Male aged 30-39 years, n = 1	'El blanco', reported to contain ethylphenidate and benzocaine	Psychiatric inpatient setting	NPS induced relapse of paranoid schizophrenia	NPS use can be a precipitant for relapse among patients with schizophrenia	NPS use should be considered a possible cause of psychiatric symptomology
Calorua et al (2016)	Individual Case report	24 year old female, n = 1	Benzylglycinamide (multi-substance use with opioids, cocaine and synthetic cannabinoids).	Emergency admission to a psychiatric hospital.	NPS induced psychosis, agitation, and insomnia.	Multi-substance use including NPS contributed to short term psychotic symptoms.	Impacts of multi-substance NPS use inducing psychotic symptoms. Impacts of those using new substances experimentally.
DiPetta (2016)	Individual Case report	Single patient admitted to hospital, n = 1	Specific NPS not specified.	Psychiatric hospital	Synthetic psychosis.	Multi-substance NPS use can lead to psychosis.	Multi-substance NPS use has implications for decline in mental health state, increased

							mental health hospital admissions and criminal activity.
Khan et al (2016)	Case report	21 year old male and 17 year old male, n = 2	Synthetic cannabinoids.	Hospital emergency department	No pre-existing mental health conditions. NPS induced. catatonia.	Catatonia can be induced by use of synthetic cannabinoids (SCs) with no existing mental health conditions.	Use of SCs may have wider psychological impacts other than psychosis.
Schwartz et al (2016)	Case report	Males and females aged 16 – 30 years, n = 8	“Crazy Clown” ADB-PINACA -Synthetic cannabinoid.	Hospital emergency department	No pre-existing mental health conditions. NPS induced anxiety, delirium, psychosis, and aggressive behaviours.	Outbreaks of psychological symptoms associated with NPS use can be detected in emergency departments.	Emergency department clinicians should be aware of the potential of the outbreak of cases presenting psychological symptoms for people using the same NPS.
Khullar et al (2014)	Individual case report	20 year old male, n = 1	Synthetic Cannabinoids and Cathinones.	Hospital emergency department	No prior mental health condition. NPS induced acute psychosis, hallucinations and severe agitation.	Use of synthetic cannabinoids and cathinones can lead to patients attending emergency department settings with altered mental status including acute psychosis	Emergency department clinicians should consider possible NPS use when patients attend with psychiatric symptoms.

Meijer et al (2014)	Individual case report	26 year old male, n = 1	Black diamond – synthetic cannabinoid.	Hospital emergency department	No prior mental health condition. NPS induced acute psychosis, self-mutilation.	Use of synthetic cannabinoids can lead to self-inflicted injuries.	Mental health symptoms induced by the use of synthetic cannabinoids can lead to physical injuries.
Bajaj et al (2010)	Individual Case report	Young male, n = 1	4-methylmethcathinone (mephedrone).	Specialist mental health services	No prior mental health condition NPS induced psychosis	Dependant use of mephedrone can lead to psychosis. This case was admitted to a psychiatric inpatient unit and treated with medication and recovered well.	Stimulant NPS can lead to drug induced psychosis. This can be treated with medication.
Bassir et al (2016)	Clinical audit	Males, mean age 40 years, n = 594	Synthetic cannabinoids.	Psychiatric inpatient setting	Exacerbation of psychosis and agitation in patients with existing mental health conditions.	When comparing SC use with cannabis use in a mental health inpatient setting; psychotic presentations and agitation are more likely to be seen with those using SCs.	Psychiatric co-morbidity associated with SC use varies from the symptoms associated with cannabis use.
Shalit et al (2016)	Clinical audit	NPS group n = 60, mean age 30.5, 86% male, 5% married, 22% employed	Synthetic cannabinoids	Psychiatric hospital	Multiple mental health conditions reported	When comparing reported SC use with cannabis use in a psychiatric inpatient setting, SC use was associated with	Patients admitted following use of SC generally have a higher severity of psychotic symptoms at admission and require

		Cannabis group n = 163, mean age 34.7, 80% male, 19% married, 31% employed				longer hospitalizations and a more severe clinical picture.	longer hospitalization periods.
Shafi et al (2017)	Clinical audit	NPS group n = 58, mean group 36.2, 74% male Non-NPS group n = 384, mean age 44.9, 52%	Multiple NPS (91% synthetic cannabinoids, 7% synthetic cathionones)	Acute mental health facility	Multiple mental health conditions reported	NPS use was strongly associated with violence both preadmission and during admission. It was also associated with a longer duration of admission, substance misuse disorders and psychosis.	Mental health services face an increased risk of violence from NPS misusers compared to non-NPS substance misusers. Longer length of stay in NPS users has implications for bed utilisation and service delivery.
Kolliakou et al (2016)	Epidemiological study	Median age 30 years, 84% males, n = 468	Mephedrone.	Mental health care trust	Specific mental health condition not stated.	Social media data can be combined with mental health records to assist with public health surveillance related to NPS use and associated psychiatric comorbidity.	Information from social media surveillance may act as an early warning system for health practitioners to identify potential future increases in activity associated with NPS use.

Glue et al (2015)	Retrospective audit of case notes	74% males, median age 26.6 – 27.4 years, n = 62.	Synthetic cannabinoids.	Emergency psychiatric service	Emergency attendances related to anxiety, agitation, aggression and psychosis.	The number of the number of mental health assessments related to SC use halved following the introduction of government legislation to restrict the sale and reduce the toxicity of psychoactive substances.	Decreasing the retail availability of synthetic cannabinoids may lead to a decrease in associated mental health harms.
Besli et al (2015)	Retrospective audit of case notes	Mean age 15.4 years, 94% males, n = 16	Synthetic cannabinoids.	Hospital emergency department	No prior mental health diagnosis. NPS induced agitation, anxiety, hallucinations, and perceptual changes.	SC use in adolescents can induce psychological symptoms including; agitation, anxiety, hallucinations and perceptual changes.	Paediatricians should be aware of the potential harms of SC and how these might present in an emergency department setting.
Sarpong and Jones (2014)	Review	Population parameters not specified.	Multiple NPS.	Multiple settings	Multiple mental health conditions reported.	People with mental health conditions and those who care for them should be educated about the legal and health implications of NPS. Mechanisms for screening would be useful to identify NPS use in patients	Education on the health and legal risks associated with NPS use should be advocated. Mechanisms to readily identify NPS induced psychosis should be in place.

						presenting with psychosis.	
Gurney et al (2014)	Review	Population parameters not specified.	Synthetic cannabinoids.	Emergency hospital department	NPS induced psychosis, confusion, unresponsiveness and aggression. NPS exacerbating psychosis in patients with existing mental health conditions.	SCs have been shown to induce psychosis and exacerbate existing mental health conditions. Mechanisms for testing for NPS should be developed rapidly to keep pace with the changing nature of SC compounds.	Clinicians should be made aware of the mental health symptoms associated with mental health use. Options for testing for NPS use should be explored.
Fattore (2016)	Review	Population parameters not specified.	Synthetic cannabinoids.	Multiple settings	NPS induced new onset psychosis. NPS exacerbating psychosis in patients with existing mental health conditions.	Synthetic cannabinoids can induce new onset psychosis and exacerbate existing symptoms. This is supported by case reports and biochemical studies.	Clinical staff should be made aware of the link between SCs and psychosis and other mental health symptoms. The public should also be educated about the health consequences of SCs.

Hill and Thomas (2016)	Review	Population parameters not specified.	Multiple NPS.	Multiple settings	Multiple mental health conditions reported.	Mechanisms for clinical assessment and management for those using different classifications of NPS.	Different classifications of NPS require may present with different symptoms and require different mechanisms for assessment and management.
Lafferty et al (2016)	Survey	96% aged 20 – 49, years, 77% males, n = 413.	Ethylphenidate (a stimulant drug closely related to methylphenidate).	Community harm reduction team and pharmacy.	NPS induced delusional thoughts, hallucinations, paranoia and anxiety.	Half of those injecting NPS stimulants reported experiencing new mental health symptoms.	Injection is a route of NPS administration. Those who inject NPS may also experience new mental health symptoms.
Gray et al (2016)	Systematic review	Males aged 20 - 35	Multiple NPS.	Multiple settings	Subjects with existing diagnosis of schizophrenia or delusional/ psychotic illness or bipolar disorder. Exacerbation and onset of psychotic symptoms and behavioural changes including agitation, aggression and violence.	NPS exacerbates existing mental health symptoms and induces new symptoms for those with existing diagnoses of serious mental illness (SMI). NPS use also causes negative physical symptoms for those with existing SMI.	Mental health professionals should be aware of the psychiatric and physical symptoms associated with NPS use. Health care professionals should encourage a culture of self – reporting of NPS use.

Castanetoa et al (2014)	Systematic review	Population parameters not specified	Synthetic cannabinoids.	Multiple settings	NPS induced anxiety, agitation, psychosis, suicidal ideation.	SC use leads to the acute onset of mental health symptoms. The acute psychotic response to use of SC is supported by bio-chemical mechanisms.	SCs can lead to acute psychiatric symptoms which may lead to presentation at an emergency department.
Weaver et al (2015)	Review	Population parameters not specified.	Multiple NPS.	Multiple settings	Multiple mental health conditions reported.	<p>Different groups of NPS have been linked to the onset of adverse psychiatric effects mainly agitation and psychosis.</p> <p>Withdrawal of some groups of NPS may also have psychiatric impacts.</p> <p>Treatment of symptoms is mainly supportive with some pharmacological input.</p>	<p>Clinicians should be aware of the psychiatric symptoms associated with NPS use and withdrawal.</p> <p>Clinicians should be aware of treatment options for NPS induced psychosis.</p>

User Voice (2016)	Qualitative study	Prison population. 36.7% aged 20- 29 years, n = 803	Synthetic cannabinoids	Prison	NPS induced psychosis. NPS exacerbating existing mental health conditions.	Prisoners reported mental health problems from resulting from the use of synthetic cannabinoids. These included self-harm, anxiety, depression, paranoia and other psychotic symptoms.	Prisoners who use synthetic cannabinoids self-report experiencing mental health symptoms.
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8. Literature Search Terms

Search strategy <i>Indicate all terms to be used in the search</i>	
<p>P – Patients / Population</p> <p>Which patients or populations of patients are we interested in? How can they be best described? Are there subgroups that need to be considered?</p>	<p>All population groups using New Psychoactive Substances (NPS) with a pre-existing mental health condition OR with a diagnosed psychological condition or diagnosed psychological symptoms induced by the use of NPS.</p>
<p>I – Intervention</p> <p>Which intervention, treatment or approach should be used?</p>	<p>Any intervention for those using New Psychoactive Substances.</p>
<p>C – Comparison</p> <p>What is/are the main alternative/s to compare with the intervention being considered?</p>	<p>Use of no substance or use of another (non-NPS) illicit substance.</p>
<p>O – Outcomes</p> <p>What is really important for the patient? Which outcomes should be considered? Examples include intermediate or short-term outcomes; mortality; morbidity and quality of life; treatment complications; adverse effects; rates of relapse; late morbidity and re-admission</p>	<p><u>Critical to decision-making:</u></p> <p>Diagnosis of mental health condition(s) or psychological symptom(s). This could include NPS induced mental health conditions or exacerbation of symptoms of an existing mental health condition.</p> <p><u>Important to decision-making:</u></p> <ul style="list-style-type: none"> • Impact of NPS on the clinical management of people living with mental health conditions. • Impact of NPS policy changes on mental health outcomes or wider outcomes of people living with existing mental health conditions. • Physical symptoms as a comorbidity to a mental health condition associated with NPS use.
Assumptions / limits applied to search	

Inclusion Criteria	All dates included All peer reviewed literature included
Exclusion Criteria	None identified

9. Search Strategy

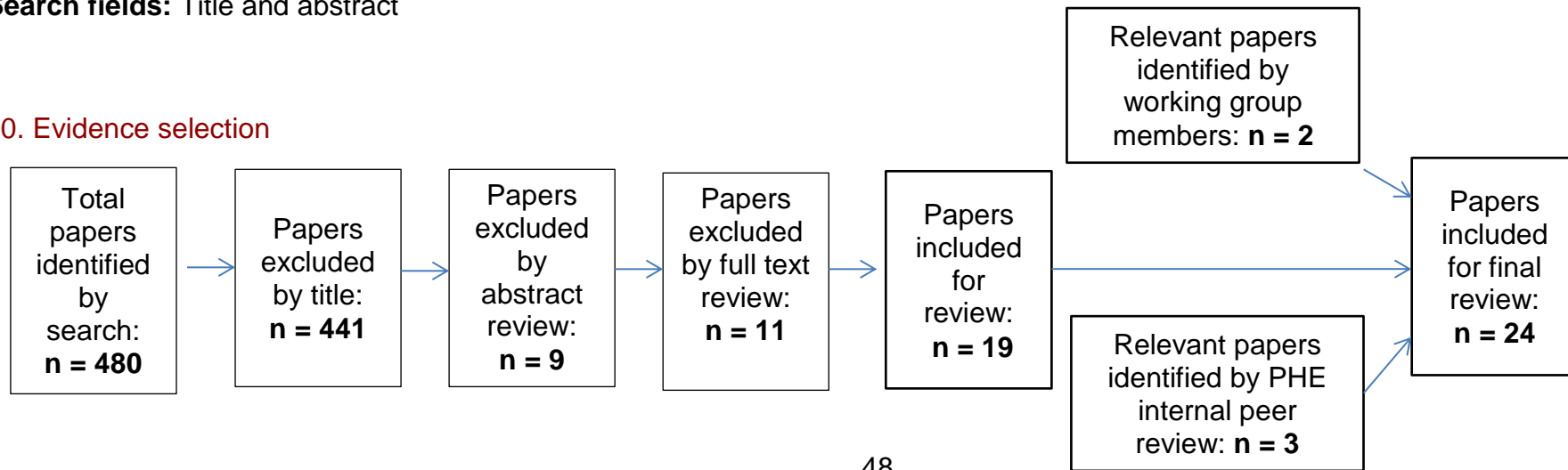
Search Terms: [NPS OR New Psychoactive Substances OR Novel Psychoactive Substances OR Legal Highs OR synthetic cannabinoids] AND [Mental health]

Date: all date range

Literature search databases: PubMed, The Cochrane Library, Elsevier..

Search fields: Title and abstract

10. Evidence selection



Database	Date of Search	Search criteria	Search results	Papers excluded on title	Papers excluded on abstract	Papers for full text review
PubMed	17/11/2016	(novel psychoactive substances[Title/Abstract]) OR new psychoactive substances[Title/Abstract])OR NPS [Title/Abstract])OR legal highs [Title/Abstract]) OR synthetic cannabinoids [Title/Abstract])AND mental health[Title/Abstract]	52	40	2	10
Cochrane Library	18/11/2016	[Novel psychoactive substances OR new psychoactive substances OR NPS OR legal highs OR synthetic cannabinoids AND mental health] Title, abstract and key words	21	21	0	0
Elsevier	01/12/2016	TITLE-ABSTR-KEY(Novel psychoactive substances OR new psychoactive substances OR NPS OR legal highs OR synthetic cannabinoids) and (Mental health or psychosis).	8	0	3	5
Public Health England	04/01/2017	Novel psychoactive substances OR new psychoactive substances OR NPS OR legal highs OR synthetic cannabinoids AND mental health in Publication Titles OR Novel psychoactive substances OR new psychoactive substances OR NPS OR legal highs OR synthetic cannabinoids AND mental health in Abstract AND Novel psychoactive substances OR new psychoactive substances OR NPS OR legal highs OR synthetic cannabinoids AND mental health in Keywords	399	380	4	15

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[http://www.nta.nhs.uk/uploads/adult-statistics-from-the-national-drug-treatment-monitoring-system-2015-2016\[0\].pdf](http://www.nta.nhs.uk/uploads/adult-statistics-from-the-national-drug-treatment-monitoring-system-2015-2016[0].pdf)
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