

NEW YORK STATE OF OPPORTUNITY | Department of Health | SCHOOL OF PUBLIC HEALTH UNIVERSITY AT ALBANY State University of New York

Reports of Adverse Health Effects Related to Synthetic Cannabinoid Use — New York, April 1–July 31, 2015

Eleni Papadopoulos

September 23, 2015

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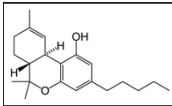
Synthetic Cannabinoids

- Encompass a wide variety of chemicals that are synthesized and marketed to mimic the action of THC (tetrahydrocannabinol), the primary psychoactive ingredient in marijuana
- Challenges in detection
 - Easily changed to create new structures
 - Individual tests must be created for each compound
 - Requires provider's clinical diagnosis

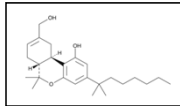
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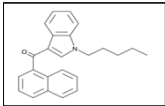
THC: The Synthetic Cannabinoid Model



THC (tetrahydrocannabinol)



HU-210 (Hebrew University)



JWH-018 (John W Huffman)

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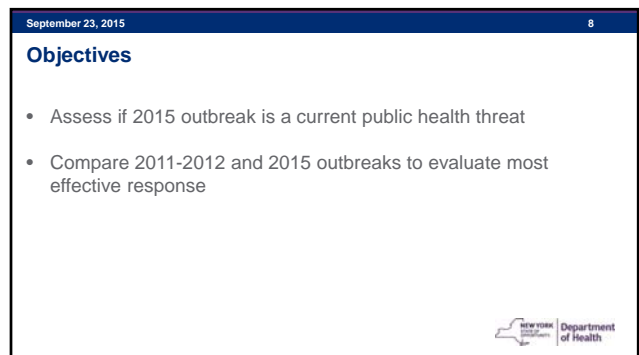
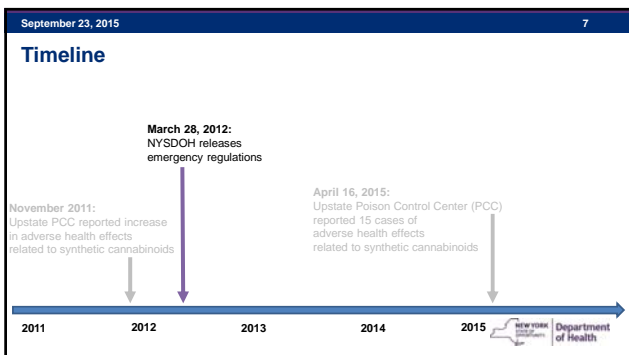
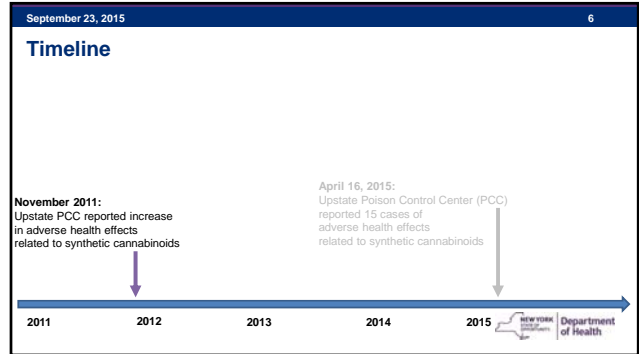
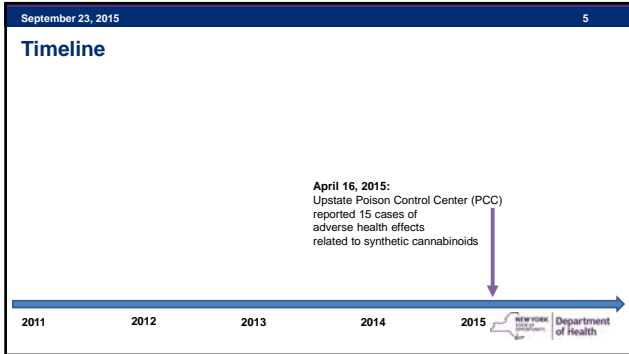
Synthetic Cannabinoids

- Sold in bodegas and on the internet as potpourri or incense
- Marked "Not for Human Consumption"



Samples of synthetic cannabinoids


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Methods

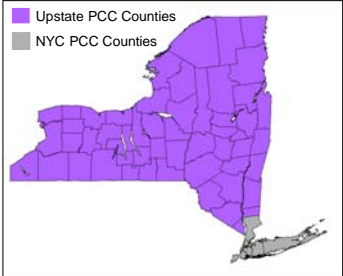
- Data was collected from National Poison Data System (NPDS)
- Case definition- a person with reported exposure to synthetic cannabinoids in New York State (NYS) during:
 - 2011-2012 Outbreak:**
November 7, 2011-May 6, 2012
 - 2015 Outbreak:**
April 1-July 31, 2015



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Study Area

- All counties except those in NYC, and Westchester, Nassau, and Suffolk counties


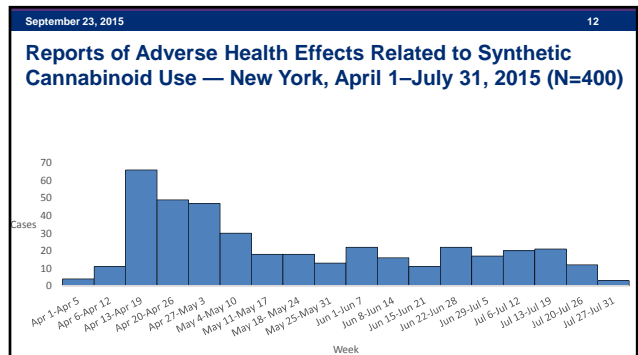


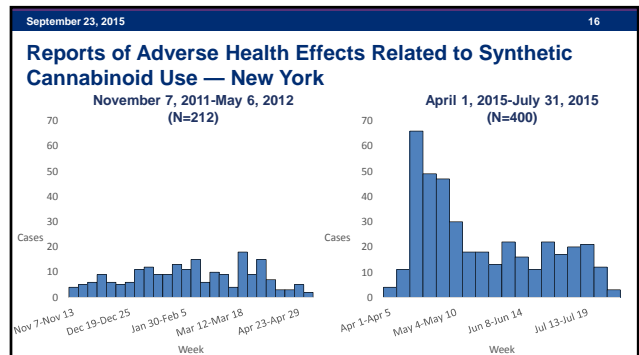
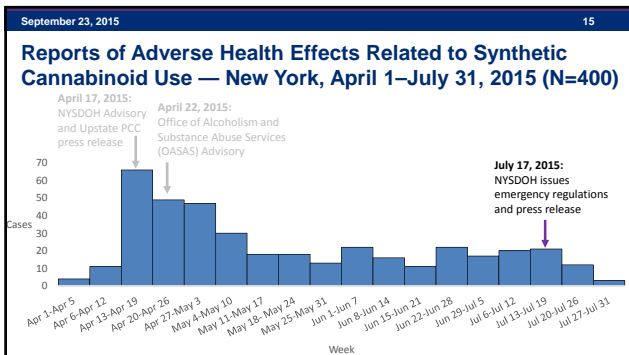
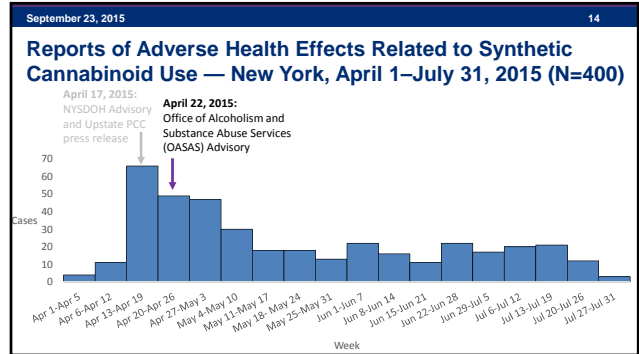
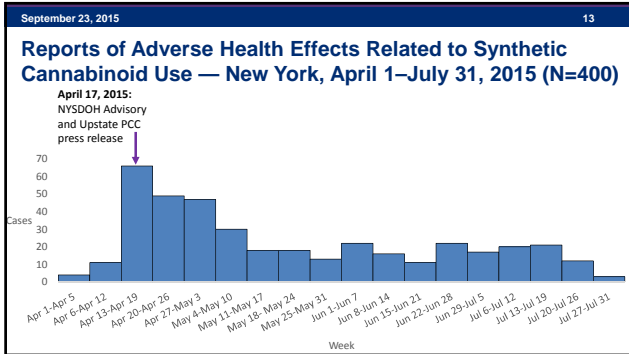
County Map of New York State

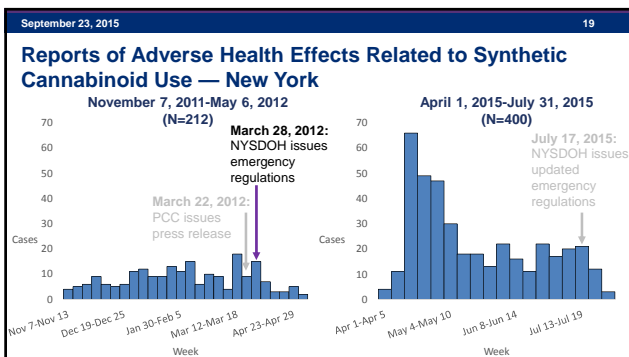
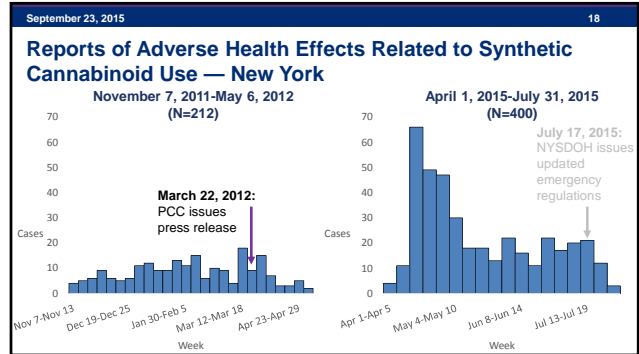
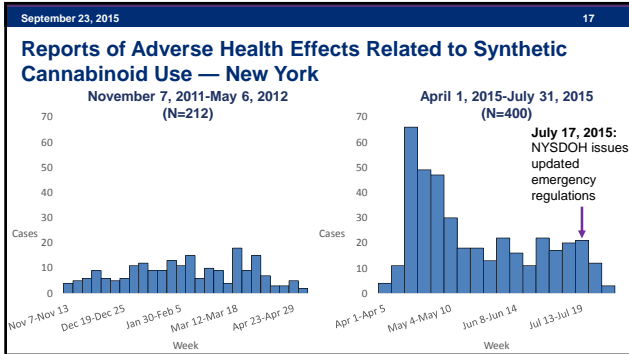
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Methods

- Data Analysis:
 - Frequencies were calculated for age and sex
 - Chi square analyses determined differences in symptoms and other factors between outbreaks
- Laboratory Analysis
 - Samples from 2015 analyzed using high resolution mass spectrometry





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Outbreak Demographics

	2011-2012 Outbreak (N=212)	2015 Outbreak (N=400)
Sex		
n (%)		
Male	161 (75.9)	321 (80.3)
Female	50 (23.6)	79 (19.8)
Age*		
Median (range)	20 (1-68)	28 (8 months-65)


*Age: 2011-2012 (N=200), 2015 (N=365)

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Symptoms Related to Synthetic Cannabinoid Use, 2011-2012 (N=212) and 2015 (N=400)^a

	2011-2012 Outbreak (N=212)		2015 Outbreak (N=400)		p value*
	n	%	n	%	
Agitation/Irritation	38	17.9	180	45.0	<.0001
Lethargy	32	15.1	179	44.8	<.0001
Tachycardia	73	34.4	103	25.8	0.02
Confusion	16	7.6	63	15.8	0.004
Bradycardia	5	2.4	55	13.8	<.0001
Vomiting/Nausea	38	17.9	49	12.3	0.56
Mydriasis (Pupil Dilation)	13	6.1	38	9.5	0.15
Hypotension	5	2.4	33	8.3	0.004
Hypertension	20	9.4	30	7.5	0.41
Seizure	11	5.2	29	7.3	0.33
Coma	4	1.9	21	5.3	0.046
Other ^b	100	47.1	114	18.6	<.0001

^asymptoms are not mutually exclusive
^bsymptoms that resulted in <5% of cases in 2015 were added to the Other category
*statistical significance (p<0.05)




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Symptoms Related to Synthetic Cannabinoid Use, 2011-2012 (N=212) and 2015 (N=400)^a

	2011-2012 Outbreak (N=212)		2015 Outbreak (N=400)		p value*
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Level of Care Related to Synthetic Cannabinoid Use, 2011-2012 (N=212) and 2015 (N=400)

	2011-2012 Outbreak (N=212)		2015 Outbreak (N=400)		p value*
	n	%	n	%	
Admissions	44	20.8	108	27.1	0.09
Hospital Admissions (Critical and Non-Critical Units)	29	13.7	104	26.1	0.0004
Critical Care Unit (CCU)	19	9.0	73	18.3	0.002
Non Critical Care Unit	10	4.7	31	7.8	0.15
Psychiatric Facility	15	7.1	4	1.0	<.0001
Treated/evaluated and Released	137	64.6	254	63.5	0.78
Patient Refused Referral	3	1.4	1	0.3	0.09
Patient Lost to Follow up	14	6.6	23	5.8	0.67
Unknown	14	6.6	14	3.5	0.08

*statistical significance (p<0.05)




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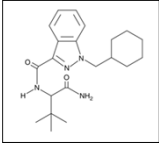
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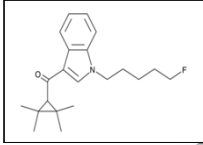
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Lab Analysis


- Identified different classes of synthetic cannabinoids with much higher potency for the cannabinoid receptor



MAB-CHMINACA
(indazole)

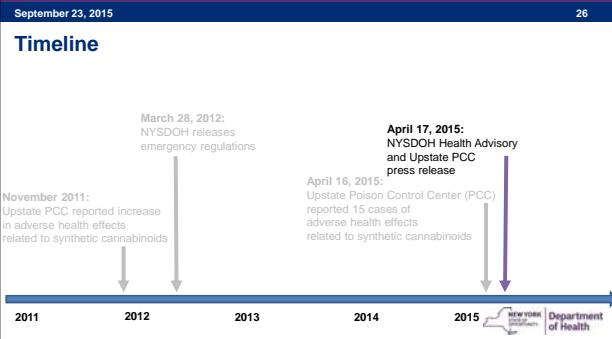


XLR-11
(indole)



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Timeline




November 2011: Upstate PCC reported increase in adverse health effects related to synthetic cannabinoids

March 28, 2012: NYSDOH releases emergency regulations

April 16, 2015: Upstate Poison Control Center (PCC) reported 15 cases of adverse health effects related to synthetic cannabinoids

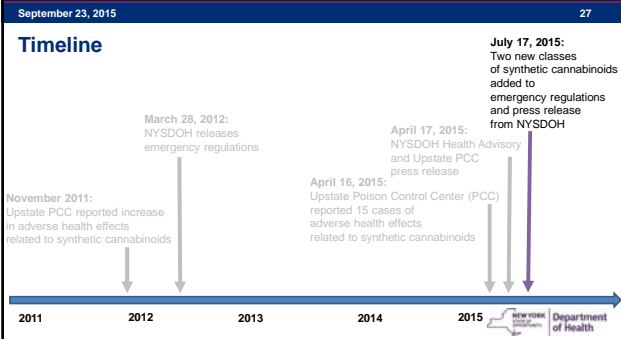
April 17, 2015: NYSDOH Health Advisory and Upstate PCC press release

2011 2012 2013 2014 2015



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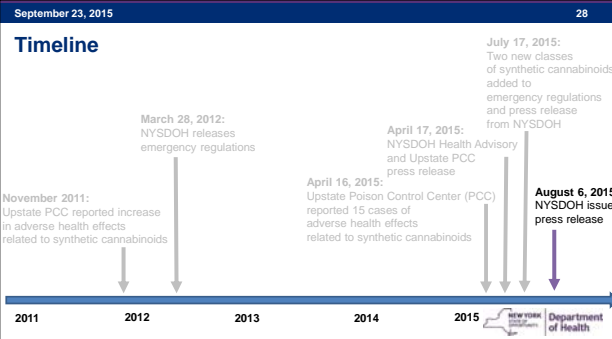
July 17, 2015: Two new classes of synthetic cannabinoids added to emergency regulations and press release from NYSDOH

2011 2012 2013 2014 2015



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August 6, 2015: NYSDOH issues press release

July 17, 2015: Two new classes of synthetic cannabinoids added to emergency regulations and press release from NYSDOH


2011 2012 2013 2014 2015



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Limitations

- Reporting bias
 - NPDS may not capture all cases
- Measurement bias
 - Physicians may have limited experience with patients affected by synthetic cannabinoids
- Lack of laboratory test limits diagnosis



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Conclusions

- Synthetic Cannabinoids pose a public health threat in NYS
 - Different symptoms and newer compounds
 - Percentage of Critical Care Unit admissions doubled from 2011-2012 to 2015
- NYSDOH continues to monitor the outbreak
 - July 17, 2015: Two new classes of synthetic cannabinoids added to emergency regulations and press release from NYSDOH
 - August 6, 2015: NYSDOH issues press release



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Recommendations

- Utilize and compare other data sources
- Outreach education to healthcare professionals and targeted populations
- Work with law enforcement organizations



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