

Spotlighting Reward Deficiency Syndrome (RDS) in Face of the Opioid Epidemic in America: Should we Embrace Induction of “Dopamine Homeostasis”?

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Received: April 20, 2019; **Published:** May 30, 2019

Americans are faced with the worst ever Opioid Epidemic responsible for killing hundreds of thousands of people prematurely dying from opioid overdose [1]. Specifically, the Center for Control Disease (CDC) estimated that over 100 people in America are dying every day. In America the death toll has reached over 600,000 with approximately 70,000 are dying annually [2]. Some place the blame on the pharmaceutical companies pushing powerful opioid analgesics as evidence in 2016 a remarkable 298 million prescriptions for Oxycontin® was written [3]. In spite of recent CDC guidelines attempting to monitor the over-prescription of these powerful opioids there has been a significant drop in opioid legal use. Deaths from fentanyl and a handful of other synthetic opioids tripled from 3,105 in 2013 to 9,580 in 2015, and those numbers are likely underestimates; some medical examiners do not test for fentanyl and many overdose death certificates do not list specific drugs involved.

Certainly, we know our group has favored a novel approach to combat not only drug-related seeing behaviors but non-drug addictive behaviors including pathological gambling, internet addiction amongst a remarkable list of other debilitating behaviors especially in our youth [4].

With that stated Geneus Health, LLC of San Antonio, Texas, is compelled to respond to this unfortunate uncontrollable spread of opioid use disorder across the United States of America. Reward Deficiency Syndrome (RDS) as a disease or condition was first coined by one of us in 1995 [5]. However, some push back is because RDS does not appear in the DMSV, should not in itself reduce the clinical relevance of RDS [6].

To be fair it should be noted that many well-known recognized scientists including Psychiatrists have argued the validity of DSMV. For example, the American Society of Addiction Medicine (ASAM) part of the AMA has agreed to disagree with the components dealing with Drugs and Alcohol in the DSMV. Specifically, while the DSMV classifies drugs and alcohol as disorders they do not classify these highly addictive agents as being considered an addiction [7]. In fact, the only pure addiction listed in the DSMV is pathological gambling.

Moreover, Dr. Steve Hyman former Director of the NIMH has correctly argued that the DSMV is a manmade carve out of psychiatric disorders and has further argued for developing a diagnostic manual based on root causes such as neurogenetics and neurobiological

underpinnings [8] instead of disconnected psychiatric entries. In fact, there is significant work showing a neurochemical dysfunctional thread for most of all if not all addictive behaviors [9]. Many studies have suggested that there is a common neurogenetic rubric for these addictive-like behaviors whereby sugar craving has similar neurobiological dysfunction in the brain reward circuitry as does gambling as does opioid and alcohol/psychostimulant addiction [10]. Unlike single gene directed diseases like Huntington's, addictive behaviors display a polygenetic inheritance (multiple-gene linked polymorphisms and each variant having small contribution to the variance) being much more complex in nature [11].

Understanding the concept of switching one addiction for another addiction (i.e., alcohol recovery switching to high glucose intake) and the common genetic rubric especially as it related to neurotransmitter pathways as described in our earlier communication detailing the Brain Reward Cascade (BRC) and explaining net dopamine release at the brain reward site (Nucleus Accumbens [NAc]) [12], has been an accepted concept worldwide [13]. In fact, RDS has been featured in a number of medical dictionaries including Collins Dictionary of Medicine and others. They define it as “A name for a relative failure of the dopaminergic system which plays a major part in brain-reward mechanisms [BTW Brain Reward System is included as a terminology in DSMV]. The syndrome, which has been linked to dysfunction of the D2 dopamine receptors [now many more genes linked to hypodopaminergia] includes various conditions, such as drug and alcohol abuse, smoking, obesity, pathological gambling, and attention deficit hyperactivity disorder in which the subject seems to be unusually concerned to achieve reward. The D2 dopamine receptor gene is on chromosome 11 and has multiple allelic forms. Variants [as measured by GARS] have been correlated with these and other reward-seeking behaviors.

Moreover, RDS has also been included in encyclopedia.com, addiction nutrition academy, a featured psychological disorder in SAGE Encyclopedia of Abnormal and Clinical Psychology, Mental Health Daily, Wikipedia, Psychology Today, MSN dictionary, Gates Medical Dictionary and others. In terms of further recognition by scientists worldwide PUBMED lists 164 peer reviewed journal citations as of April 17th 2019. The word search “reward deficiency” resulted in 694 peer reviewed journal citations as of April 17th 2019. The term “dopamine deficiency” resulted in 5,058 peer reviewed journal citations as of April 17th 2019. The term “dopamine dysfunction” resulted in 26,441 peer reviewed journal citations as of April 17th 2019. Finally, the term “hypodopaminergic” resulted in 187 peer reviewed journal citations as of April 17th 2019.

It is important to recognize that RDS is a neurogenetic and molecular neurobiological construct including many addictive behaviors having a common neurochemical rubric and as such risk for example, drug and alcohol seeking could be identified through GARS testing a very crucial objective way to quickly determine risk stratification. Geneus Health is in the process of also identifying the psychological basis of RDS clinically and will present these findings in a pre-market application as well.

In summary, RDS while not in the DSMV has been the basis of the ASAM new definition of Addiction in 2011 [14] and is indeed a very important recognized syndrome that if embraced by the addiction medicine community may provide an important way to assist in combating the opioid epidemic especially with the advent of GARS, Pro-dopamine Regulation, Comprehensive Analysis of Reported Drugs (CARD) and many holistic tools for recovery [15-20].

Conflict of Interest

Drs. Blum and Siwicki own stock in Geneus Health LLC and Restoregen, LLC related to both GARS testing and Pro-dopamine Regulation. Mary Hauser is the VP of Addiction Services for Dominion Diagnostics, LLC and David Siwicki is a member of the Dominion Diagnostics board of directors.

Funding Sources

Dr. Badgaiyan is supported by the National Institutes of Health grants 1R01NS073884 and 1R21MH073624, and VA Merit Review Awards CX000479 and CX000780. Dr. Blum and Marjorie Gondre Lewis are funded by NIH/NIMHD grant R41MD12318.

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Volume 8 Issue 6 June 2019

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