

Reconceptualizing Addiction: Integrating the Sciences of Addiction and Reward Deficiency Syndrome (RDS), Part 2: Case Report

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Abstract

Enlarged perspective of drug seeking motivational effects of dopamine deficiency and/or deregulation, in the brain's reward cascade system provide new understanding of the underlying addiction syndrome called Reward Deficiency Syndrome (RDS). Reward Deficiency Syndrome Solutions™(RDSS) have been used to successfully treat a Substance Use Disorder (SUD) treatment resistant patient. As an alternative to repetitive Substance Use Disorder treatment, the new Reward Deficiency Syndrome paradigm was introduced to the subject, through RDS Solution Focused Brief Therapy (RDS-SFBT), facilitating increased awareness and self-efficacy, for autonomy in symptom management.

A reward deficiency syndrome treatment plan (Gilley, 2018d) was developed, based upon findings from Genetic Addiction Risk Severity (GARS) (Blum & Chen, 2011) analysis. Pre-existing neurogenic challenge, due to polymorphic genetic variances effecting dopaminergic and serotonergic systems were discovered. Epigenetic response, resulting from the brains over correction of self-induced dopamine surge, resulted in further dopaminergic insult. Intervention for correction of neurological challenge was met with an enthusiasm for self-empowerment, motivating the client to become increasingly engaged in her own recovery.

RDS Solution Focused Brief Therapy (RDS-SFBT) (Gilley, 2019) and the RDS Severity of Symptom scale (RDS-SOS) were introduced to assist in the psychoeducation of the RDS paradigm, to teach skill for achieving dopamine homeostasis, and to gauge intensity of relapse symptomology. We observed the subject over a period of months, documenting her challenge and improvement, as she learned to achieve and maintain dopamine homeostasis, through various wellness practices. The Elle Foundation Case Study 101 documents the positive effects of Reward Deficiency Syndrome science and its solutions, to facilitate transition from active addiction, and/or neurological instability, to abstinence, maintenance, self-efficacy, self-actualization and thriving (Gilley, 2017).

Keywords : Addiction, Neurogenetics, Genetic Addiction Risk Severity (GARS), Substance Use Disorder, Reward Deficiency Syndrome, RDS treatment plan model, RDS Solution Focused Brief Therapy (RDS-SFBT), Reward Deficiency Syndrome Severity of Symptom scale (RDS-SOS).

Introduction

Many addicts have a complexity of addictive behavioral expressions, experiencing more than one substance use disorder, and/or behavioral process addictions. Those with a cluster of addictive behavioral expressions, and mental health disorder comorbidity (Lozano et al., 2017; El-Guebaly, 2004), are perfect candidates for Reward Deficiency Syndrome Genetic Addiction Risk Severity screening (GARS) (Blum et al., 2015; Blum & Braverman, 2000). Many clients, in this sub-population of substance use disorder with comorbidity, have felt that they fell through the foundational cracks in the system,

suffering a revolving door of treatment episodes (Moberg & Humphreys, 2016).

Those with mental health disorders and multiplicity of addictions, quite understandably need more, because what has been available, pharmacotherapy, twelve step fellowship and cognitive behavioral psychotherapy, has not been enough to help set them on a course to change their lives. Endless cycles of craving, impulsivity, and drug seeking behaviors characterize addiction's definitive chronic relapsing. It is

much more difficult for those with dual diagnoses. Shifting neurological imbalances are experiential phenomena of dopamine deficiency. To maintain long-term abstinence, and stability, dopamine homeostasis must be achieved. Today's cutting edge RDS addiction treatment requires treatment for the neurological problems which pre-dated substance use disorder and/or behavioral addictions.

With proper respect lauded for the twelve step treatment modality, which created a foundation for building recovery around the world, it was great beginning, but we need so much more! It is now known that there are neurological and genetic components, and that the underlying syndrome existed before addiction began, and lingers after addiction is arrested. This underlying neurological issue is the core that must be addressed in order to achieve and maintain neurological, and psychological wellbeing.

The ground breaking 21st century Reward Deficiency Syndrome Addiction paradigm is precision genomic addiction medicine (Gilley & Giordano, 2022) at its best! Consider it a phase two treatment, begun after exiting inpatient substance use disorder withdrawal and stabilization treatment. RDS science delves deeper into the brain science of addiction, providing neurological solution for neurological problems which predate and continue after substance use disorder is treated.

When we zoom outward, for a panoramic view of Reward Deficiency Syndrome (RDS) predisposition over the lifespan, neurological imbalances from dopamine depletion often show up early in life as Asperger/Autism, ADD/ADHD, hyperactivity, learning delay, and/or impulsivity. As the individuals matures, RDS may appear as depression, anxiety, bipolar, PTSD, Impulsivity, Obsessive-Compulsive Disorder, Eating Disorders, Obesity, Restless Leg Syndrome, or Gil de Tourette. Late stage RDS, reveals severe dopamine dementia, tremors, Parkinson's disease and/or Alzheimer. All RDS expressions over the lifespan are related to dopamine deregulation.

Put simply, if the patient has genetic mutation or predisposition for neurological issues, we want to treat this as soon as possible, so that it does not become worse, through epigenetic response to drug use. Eventually Reward Deficiency Syndrome will be treated as a frontline modality, by primary physicians, who can make referrals to neuropsychological specialists who are trained in RDS. A simple RDS symptom self-measurement test takes 3 minutes to complete. A simple Genetic Addiction Risk Severity (GARS) test checks for the ten genes and eleven alleles, which are the most common genes involved in addiction and mental health disorder.

A neuropsychologist trained in RDS, interprets the genetic analysis, and works with a psychiatrist to inform the selection of proper pharmaceutical response, taking out the guess work. This is revolutionary for the patients who could spend a decade looking for the right medicine. The RDS treatment plan model as uses nutritional amino acid therapy to help heal the brain from toxicity.

Some experts now view drugs use as symptom of addiction, not the cause (Gilley, 2018). This is quite the reversal, but it is logical, when you look at the larger picture. Drug use is a symptom, a response to, and a result of the underlying addiction syndrome, which is dopamine depletion. When viewed from this perspective, or lens, is makes a lot of sense because behaviors, like binge eating, gambling, drug use, all involve creating a dopamine surge which floods the system and relieves the dis- ease. People just want to feel better. Sometimes, it's more about relieving pain, than pleasure.

Dopamine depletion is a miserable neurological, physiological and psychological deprivation state, with symptoms of Anhedonia and Dysphoria erupting in agitated over-reaction. Neurological imbalances require neurological solutions. The new RDS paradigm views the problem through the lens of neurotransmission. Psychological education of Reward Deficiency Syndrome helps the client understand how RDS effects their lives. RDS Solution Focused Brief Therapy (RDS-SFBT) teaches management of the dopamine depletion symptoms, and assists in the development of self-management skills for achieving and maintaining dopamine homeostasis.

Fifty years of research study support the dopamine depletion hypothesis (Diani, 2011; Dackis & Gold, 1985), and the neurodevelopmental model of dopamine deregulation (Leyton & Vezina, 2014). These incredible strides in addiction science lay the foundation for the new RDS paradigm. Global advancements in addiction medicine, (Reese et al., 2021), behavioral health (Gilley, 2021b,c), and psychiatry and Columbia University's meta-analyses of the gap between science and practice (CASA, 2012), implore the Substance Use Disorder /Addiction Psychology industry to upgrade the standard of treatment care to address neurogenetic challenge and dopamine depletion issues in the brain's reward cascade system.

In this new era of genomic medicine (Blum & Badgaiyan, 2021, 2015), Reward Deficiency Syndrome has already begun changing the addiction recovery landscape (Blum et al., 2017; Blum et al., 2014) by unifying all obsessive-compulsive, impulsive, addictive behavioral expressions (Beitscher-Campbell et al., 2016; Blumenthal & Gold, 2010), under a common rubric (Blum, Bowirrat et al., 2021; Blum & Braverman, 2000). Reward Deficiency Syndrome science provides unification of theory, combining both the dopamine depletion hypothesis (Dackis & Gold, 1985) and the neurodevelopmental model of dopamine deregulation (Leyton & Vezina, 2014), as well viable solution application.

The RDS Treatment Plan Model

As presented in the 2021 Global Conference of Addiction Medicine, Behavioral Health, and Psychiatry, the author states that "addiction needs to be reconceptualized, through an integration of the sciences of addiction medicine and the science of Reward Deficiency Syndrome" (Gilley, 2021a, 2020). (Blum et al., 2021; Edwards et al., 2020). RDS treatment plan models (Gilley, 2018d) for addictive and non-addictive

RDS expression (Blum et al., 2021), begin with Genetic Addiction Risk Severity (GARS) screening, as the starting point, for the creation of personalized genomic intervention for dopamine depletion, and/or dopamine deregulation (Blum et al., 2019; Blum & Badgaiyan, 2021).

GARS screening identifies polymorphic variance in ten common psychiatric genes, which can provide insight into preexisting neurological challenge, and identify the proper mechanism of action, for neuroreceptor cell site target, through pharmaceutical (Blum et al., 2015) and nutraceutical amino acid therapeutic regimens (Blum et al., 2021).

Table 1: Reward Deficiency Syndrome (RDS) Treatment Plan Model

- A. GARS, Genetic Screening for RDS behavioral expression and Addiction Risk Scores.
- B. Multifaceted brain imaging to assess damage, and identify targets for intervention.
- C. Begin nutraceutical amino acid therapy (NAAT) regime for brain health.
- D. Evaluate the appropriateness of dopamine agonist therapy and other pharmaceutical therapy for short term neurological stabilization for mental health disorder diagnoses.
- E. Reward Deficiency Syndrome Solutions™ and Precision Addiction Management (PAM) protocol adherence.
- F. RDS Solution Focused Brief Therapy for psychoeducation of RDS paradigm and focus upon natural means of achieving dopamine homeostasis.
- G. Initiate wellness practices for mind, body and spirit: such as exercise, nutrition, and spiritual enhancement.
- H. Introduce neurotherapies such as neurofeedback, electromagnetic frequency therapies to balance brain frequencies and offset EEG imbalances
- I. Cognitive psychology, motivational interviewing, mindfulness based stress reduction technique, and grounding meditations for spiritual development and relapse prevention skill development.
- J. Twelve step meetings, recovery support groups, and sober living community networking.

Gilley, E. D. (2018). A proposed treatment plan model for Reward Deficiency Syndrome: To help in restructuring the addiction recovery industry. *European Journal of Biomedical and Pharmaceutical Sciences*, Volume 5, Issue 11, pages 84-90.

New neuro-genetic psychotherapy and RDS measurement test have been created. RDS Solution Focused Brief Therapy (Gilley, 2019) provides an introduction of the new RDS paradigm, for the therapist, client and their family members. Mitigation of chronic abstinence symptom severity (Miller et al., 2012), is not only essential, but critical, to the process of learning RDS-SFBT skill technique for achieving and maintaining dopamine homeostasis (Blum et al., 2009). The RDS/Addicted client must unlearn patterned behaviors which induce an artificially created dopamine surge (Linnet, 2019). The transition from artificially spiked dopamine surge to achieving dopamine homeostasis (Blum et al., 2021) through wellness practice is expected to be challenging, and often uncomfortable (Blum et al., 2021).

Earlier RDS research utilized the Chronic Abstinence Symptom Severity (CASS) scale -revised as a 15 item self-report of continuing hardship, to gauge relapse risk (Miller, 2012). In RDS solution focused brief therapy, an RDS-SOS self-report assessment instrument is created by the client, to assist in self-awareness, for recognition and adaptation, to guard against reinstatement (Thompson et al., 2017; Tooby, 1990). Clients must learn to identify the nuances of dopamine deficiency and/or depletion (Karimpour-Vazifekhorani et al., 2020), and reward moderation (Cunningham et al., 2021). Each must learn to identify the subtleness of Anhedonia (Gold, Blum, Febo, & Badgaiyan, 2018), and its interactive role with Dysphoria (Kalivas & O'Brien, 2008), and other phenomenological RDS experiences (Blum et al., 2009). These all fuel the stress engine driving cue-induced relapse (Gilley & Giordano, 2022; Gilley, 2017, 2018a).

Sometimes, a temporary pharmaceutical bridge to assist clients with a cluster of mental health disorders achieve stability is necessary. But considering the long term damage of pharmaceuticals, wherever possible this should be a short term intervention. The introduction of regimen of nutraceutical amino acids therapy is always the correct response (Blum et al., 2016).

In addition to teaching self-management skill technique for monitoring and mitigating one's symptomology, Reward Deficiency Syndrome treatment plans and Solution Focused Brief Therapy also utilizes personality psychology (Gilley, 2021a; Gunderson, 2010; Blinkhorn & Johnson, 1990) to motivate clients, to take an active role in creating their own wellness plan (Baumeister & Tice, 1996). Proper selfcare includes consideration for nutrition, diet and exercise (Swenson et al., 2020). Integrative wellness practices, like yoga, meditation, combined with increasing social connectivity within the recovery community contributes to the overall quality of life and wellbeing of the client. Reward Deficiency Syndrome solutions, quite naturally, align with integrative wellness practices which restore balance, across the holistic realms of mind, body, and spirit.

In the new era of genomic addiction medicine, the Reward Deficiency Syndrome informed neuro-psychotherapist draws from the banquet of psychologies, to utilize application from cognitive, positive, (Jayawickreme, 2012; Krentzman, 2013; Kobau et al., 2011), humanistic, transpersonal (Gilley, 2016), existential and integral psychologies to motivate the client to maximize their potential and thrive (Hoge et al., 2017). For the

good of the client, a paradigm shift needs to occur, away from the old twelve step paradigm which teaches powerlessness, “once an addict always an addict” kind of thinking (Flanagan, 2013). Humanistic, positive, and cognitive psychologies assert the power of correct thinking, restoring the balance of power to the individual, exclaiming their powerfulness in recreating wellbeing. This is a shift in the locus of control, from an external source to an internal source (Judge & Bono, 2001).

The Elle Foundation Case Study #101:

The observational study proband has addictive behavioral expressions, DSM-5 diagnoses (Patel, et al, 2018) for Cocaine Use Disorder (CUD) (Balconi & Finnochiarri, 2015), Alcohol Use Disorder (AUD) (Kuhlemeier et al., 2021; Patel et al., 2018), and Tobacco Use Disorder (TUD) (South, 2015; Regier et al, 1998). She also experiences a complexity of neuropsychological complexity and has DSM-5 diagnoses of Bipolar 1, Attention Deficit Hyperactivity Disorder (ADHD) (Casey et al., 2014; Gold et al., 2014; Gilley, 2018,b) and Post Traumatic Stress Disorder (PTSD) (Blum et al., 2019; Gilley, 2013). To label this case study substance use disorder treatment resistant would be a disservice, as SUD treatment only addresses the symptoms, and not the causal influences of Reward Deficiency Syndrome disorder (Blum et al., 2021; Blum et al., 2013).

Discussion

Case Study EF101’s self-report of symptom experience indicated a need for more in-depth analysis of neurogenetic risk for Reward Deficiency Syndrome. To evaluate Reward Deficiency Syndrome (RDS) predisposition, the Genetic Addiction Risk Severity (GARS) test (Blum et al., 2015; Blum et al., 2012) was administered. GARS analysis determined phenotype (Blum et al., 2011). Proband showed increased risk for Reward Deficiency Syndrome, Cocaine Use Disorder and Post-Traumatic Stress Disorder (Blum et al., 2021), having 5 out of a potential 22 polymorphic variances (Palmer et al., 2015). The Proband’s genome displays genetic sequencing material which is known to be correlational to increased risk for Attention Deficit Hyperactivity Disorder (ADHD), impulsive, high risk behavior, novelty seeking, increased metabolism of dopamine and increased serotonin reuptake.

GARS results were interpreted neurogenetically, and neuropsychologically, for pharmacokinetic challenge (Gilley & Giordano, 2022; Blum et al., 2014) and utilized as a roadmap for creating a uniquely informed genomic pharmaceutical intervention (Blum et al., 2008), specifically tailored to offset increased dopamine metabolism (Punzi, 2016; Blum et al., 2012; Blum et al., 2010) and increased serotonin reuptake (Alguacil, & Gonzalez-Martin, 2015). The case study quickly responded, achieving neurological stability, and displayed the ability to maintain abstinence. The daily pharmaceutical regimen was phased down, discontinued at 80 days abstinence, intermittently used as an “emergency assist” for temporary relief, when RDS symptom severity threatened reinstatement. Personalized for phenotype, Neuroadaptagen Amino-Acid Therapy (NAAT) (Blum et al., 2016; Blum et al., 2011) was introduced to restore brain health (Miller et al., 2012).

Reward Deficiency Syndrome – Solution Focused Brief Therapy (RDS-SFBT) (Gilley, 2019) was prescribed to provide psychoeducation of the RDS paradigm, to teach self-management skill technique, for achieving and maintaining dopamine homeostasis (Blum et al., 2021; Gilley, 2021). The Chronic Abstinence Symptom Severity scale-revised (Miller et al., 2012, 2010) was used as a psychometric model, in the development of a personalized RDS symptom self-measurement tool. The resulting RDS Severity of Symptom scale (RDS-SOS) was personalized for EF 101’s unique symptomatic expression, and used for record of symptom fluctuation (Gilley & Giordano, 2022).

Client was motivated to develop her own wellness practice plan: 1) to mitigate and minimize Reward Deficiency Syndrome dopamine depletion and deregulation symptomology (Gilley, 2018,d, 2019, 2020); 2) to regain physical and psychological health through improved nutrition (Blum et al., 2014), daily exercise, integrative mind/body practices (Gilley, 2017, 2018a,b,c); 3) create a support network through community engagement (Gilley, 2021), and 4) take responsibility for her own recovery, self-actualization, and thriving. This progress report shows clients maintaining abstinence from psychoactive drugs in all forms: illicit street drugs and pharmaceuticals. Client is stabilizing, working a wellness plan she created, including daily regimens of NAAT (Blum et al., 2021), improved nutrition (Beitscher-Campbell, et al, 2016), diet (Blum et al., 2014) and exercise (Archer, 2017). She participates daily in recovery connections with others through zoom, text and social media platforms. She is engaged socially within her community. She continues to address the challenges of spinal structural misalignment immobility.

Summary

SUD/RDS clients require treatment for Reward Deficiency Syndrome, in addition to SUD treatment, because the neurogenetic challenges which pre-dated addiction, continue after addiction is put in remission. These very symptoms must be addressed outside of the SUD paradigm. Having too few dopamine receptors (Blum et al., 2019), and other genetic challenges, which create neurological hardship set the stage for eventual drug use, which over time, creates epigenetic insult, through brain adaptations to offset the damage done through addictive behavioral expressions, both substance oriented and behavioral process addictions. Epigenetic changes are the brain’s attempt to restore balance, or homeostasis, by sometimes over correcting, the situation, as in reducing the dopamine set-point for normal neurotransmission (Blum et al., 2021; Gilley, 2017).

Neurobiological issues (Linnet, 2019) complicate neurogenetic and epigenetic challenge, in the goal of restoration of neurological balance, homeostasis, among several channels of neuro- transmission. It is important to note that it is not just dopamine deregulation that provides instability, but also disruption of other neurotransmitters such as epinephrine, serotonin, and endorphins, etc. (Blum et al., 2020).

The RDS paradigm shift does not just combine addiction under a common rubric, it links other mental health disorders involving dopamine deregulation, like Attention Deficit Hyperactivity Disorder (ADHD) (Gold, & Blum, 2014; Gilley, 2018b,c; Archer et al., 2011), the Depression spectrum, which includes Bi-polar, and Post Traumatic Stress Disorder (PTSD). The new fields of psychiatric genetics and bio-neuro-psychology, with over 50 years of research support, filling the evidence base, demand that addiction recovery treatment align with genomic medicine (Blum et al., 2019).

Prior to the success of EF101's RDS treatment plan and RDS-SFBT intervention, her situation was dire. She was challenged to either acclimate to a new normal, by stepping up, becoming more present, to actively engage life, accepting responsibility for self-management outcome of her dopamine deficiency, and dopamine deregulation challenges, through restorative wellness practices or comfortably fade into the oblivion of encroaching pharmaceutically assisted dementia. For EF101 Reward Deficiency Syndrome Solutions™ are working.

Conclusions

Where do we go from here? The Elle Foundation 100 series consists of comparison and contrast of a family of RDS predisposed individuals who have a variety of addictive behavioral expressions, as well as many mental health disorders, all which are believed to have Reward Deficiency Syndrome neurogenetic predisposition. In expanded case report of this case series, Elle Foundation research review analysis reports on Reward Deficiency Syndrome, as a frontline modality for inducing dopamine homeostasis over the lifespan (Gilley & Giordano, 2022).

Our heart goes out to the families and loved ones of the 100,000 who died of opioid overdose in the past year (Finan et al., 2021). Regretfully, they did not have the luxury of receiving training in the new paradigm, to effectively put themselves in the driver's seat of their own recovery. To the families of those who died, please know that RDS resources are available, but you will have to look outside the box, because they are not currently available in twelve step treatment in the practitioner world.

The Elle Foundation believes that patients everywhere should have access to cutting edge innovations, which are not on the menu, at your local treatment provider. For the generations of addicts (Fried, 2019) who have only worsened, over the course of decades, of revolving door substance use disorder twelve step treatment (Moberg & Humphreys, 2016), never having the opportunity to address the underlying neurogenetic challenge and/or the resulting epigenetic insult, quite frankly, it might be too late (Moses et al., 2019). The neuropsychological damage may be too extreme, to overcome, to stall encroaching dementia before time runs out.

However, it is not too late for their children (Gold et al., 2014), the next generation of potential sufferers (Blum et al., 2021) to have opportunity for prevention through GARS screening

(Fried et al., 2019; Casey 2014). Please take advantage of Genetic Addiction Risk Severity (GARS) screening as an aid in prevention of addiction in the children of addicts!

In a perfect world, RDS families would have access to viable treatment for the causal influences of their issues (Blum et al., 2021; Leyton, 2017) and cutting edge opioid detoxifications, that are currently limited due to political pressure from Big Pharma lobbyists (Luz, & Mash, 2021). However, RDS treatment solutions are not yet found within the twelve step addiction recovery industry, nor within the guidelines American Psychiatric or Psychological Associations (El-Guebaly, 2004). Encouragingly, Sage Encyclopedia of Abnormal and Clinical Psychology and the American College of Addictionology and Compulsive Disorders has recognized Reward Deficiency Syndrome as a biogenic model for the diagnosis and treatment of impulsive, addictive and compulsive behaviors.

The opioid epidemic (Gold et al., 2020) within a global pandemic presents new urgency (Blum et al., 2021), to look beyond the psychopathology of substance use disorder, to address the underlying neurogenetic and epigenetic causal influences. The urgency of need has never been more apparent, or more dire. Substance use disorder treatment addresses the symptoms of drug use, but falls short of treating the underlying neurogenetic and epigenetic causal influences (Volkow, 2014). Families of addicts, their children and grandchildren will need to look outside the box of traditional, conventional treatment, for neurological remedy (Leyton, 2017).

The Elle Foundation's Award of Excellence, initiated in the year 2000, to showcase novel contributions, which raise the addiction recovery industry above the Hazelden Model standard, is an excellence place to begin looking for cutting edge resources which are not yet available within the current practitioner world. A list of certified RDS practitioners, can be found at geneushealth.com. For counselors and therapists interested in getting certified in Reward Deficiency Syndrome, please contact the Elle Foundation and/or the American College of Addictionology.

Interested parties may contact the Elle Foundation, in the United States, at 561-951-9061, for screening for research study. In person and online RDS neurotherapy, genetic screening, treatment plan development, Reward Deficiency Syndrome Solution Focused Brief Therapy are currently available. For social media resources, see facebook.com/ellefoundation.

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