Journal of The Gujarat Research Society
ISSN: 0374-8588
Volume 21 Issue 11, October 2019

The Past and Future of Alcohol Dependence Treatment Research: A Review

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ABSTRACT: ***Over the last 40 years, considerable progress has been made in the treatment of alcoholism. Project MATCH at the National Institute on Alcohol Abuse and Alcoholism looked into the possibility of tailoring treatments for specific people to better suit their needs, and Project COMBINE at the National Institute on Alcohol Abuse and Alcoholism looked into in-depth cognitive behavioral therapy and medical management. These studies helped pave the way for a new approach to alcoholism treatment. The issue was further characterized by new results from the National Epidemiologic Survey on Alcohol and Related Conditions. The creation of methods to define, assess, and monitor fidelity to a specific conceptual psychotherapeutic approach has been at the core of this study, allowing for unambiguous comparisons across conceptually and technically different approaches. Scientific technique and statistics advancements have given methods for analyzing large datasets. The results are a step up from the initial treatment models created decades ago, which tended to be based on anecdotal evidence and assumptions. Scientists can now go on and tackle the next set of problems thanks to their hard work. Future research, in combination with a reformed treatment system capable of quickly disseminating new scientific discoveries to the public, holds the key to substantially enhancing treatment outcomes and decreasing the suffering caused by alcohol-related illnesses.***

KEYWORDS: ***Alcohol, Alcohol Disorders, Alcoholism, Medicines, Treatment,***

1. INTRODUCTION

Over the last 40 years, remarkable progress has been achieved in the treatment of alcohol use disorders (AUDs). We now have a better grasp of the natural history of binge drinking and the development of addiction. We have a better understanding of the healing process, as well as the risk factors and prognostic markers for AUDs. Above all, we have made tremendous progress in the behavioral and pharmacological therapies accessible to individuals with alcoholism and their families. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) has funded research that has helped to advance therapy, pushing us away from anecdotal methods and toward evidence-based treatments. Of fact, new scientific discoveries usually always raise more questions than they answer, and this is no exception in the field of alcohol treatment research. Over the last four decades, scientists have faced a slew of new scientific problems. The most important of these difficulties is to fully comprehend the scientific underpinnings of health behaviors like alcohol use. This requires a thorough knowledge of human behavior and the processes involved in decision-making, as well as the social factors that affect those choices; in other words, we must understand who we are and why we behave the way we do. To create new and more effective methods to assist individuals overcome alcohol addiction, it's particularly essential to find potentially adjustable operators inside the systems that decide these behaviors. One way to do so is via medicines, which will need discovering neurophysiological and genetic targets in order to create new drugs with unique mechanisms. Better-targeted behavioral treatments are also required to address certain behaviors (such as addiction). Finally, we want to make sure that more individuals react to therapy and that the benefits of that treatment are long-lasting[1].

In addition to tackling these scientific difficulties, a new approach for risk prevention and treatment for heavy drinkers and individuals with alcohol dependency is urgently needed. The Minnesota Paradigm, which was created by experts in a Minnesota state hospital and popularized by the Johnson Institute and the Hazelden Foundation, is the current treatment system model. The Minnesota Model merged the first five steps of AA with lectures on the illness idea of alcoholism and some practical supportive psychotherapy, based on what was known at the time (mainly via the folk knowledge of Alcoholics Anonymous [AA]). The utilization of staff employees who were recovering from alcoholism, as well as others, was essential to the idea. Unfortunately, since this model of care was created without a scientific foundation, it was not designed to adapt quickly in response to scientific advancements. More than 90% of community treatment programs in the United States now provide just lectures, group therapy, and AA referrals. Treatment staff personnel are often undertrained and supervised, underpaid, and do not remain for extended periods of time. In reality, rather than advanced psychotherapy, the "counseling" that is given often comprises of casual conversation. This is not meant to belittle the devoted professionals who spend their lives to assisting those who are struggling with addiction. In contrast to the counselors who offer behavioral therapy in efficacy studies, most addiction counselors have little to no education and virtually no oversight. In addition, only a few treatment programs employ multidisciplinary teams that include doctors, psychologists, nurses, and social worker. As a consequence, there is a gap between what has been found via research and what is actually applied in daily practice, or what can be done given the current condition of the treatment system[2].

1.1 Challenging Current Treatment Models:

The first decades of research on the treatment of alcoholism were characterized by several assumptions: (1) that change occurred as a result of, or was significantly influenced by, interaction between a client or patient and a professional in other words, psychotherapy; (2) that the technical differences between different psychotherapeutic approaches would result in different outcomes, or at least differing outcomes; and (3) that the technical differences between different psychotherapeutic approaches would result in different outcomes, or at least differing outcomes. Most of these assumptions have been shown to be incorrect, or at best, inaccurate. Approximately three-quarters of individuals who suffer from alcoholism decrease or quit drinking without seeking professional help or even interacting with a community support group like AA. Psychotherapies that are theoretically and technically different produce outcomes that are quite similar. Almost 70% of individuals who acquire alcoholism have mild-to-moderate forms of the disease that are self-limiting. Although certain therapist techniques, such as using an empathetic, engaging approach, have been linked to slightly improved results, it is still unknown what causes transformation.

Finally, there is no obvious difference between “addiction” and “heavy drinking.” In reality, non-symptomatic excessive drinking blends gradually into mild, moderate, and severe and recurring dependency in a minority of individuals afflicted. Alcoholism does not always develop; it may have lengthy periods of stability or fluctuate between heavy and moderate drinking as well as sobriety. Many of these findings, however surprising they may seem, are the product of thorough study conducted by a committed scientific community. The creation of methods to define, assess, and monitor adherence to a specific conceptual psychotherapeutic approach was at the core of this study, allowing for unambiguous comparisons across conceptually and technically different approaches.

Scientific technique and statistics advancements have also given methods for analyzing large datasets. Scientists can now go on and tackle the next set of problems thanks to their hard work.

For instance, NIAAA's Project MATCH compared three different approaches: cognitive–behavioral, which focuses on teaching skills like drink refusal and relapse prevention; motivational enhancement, which focuses more on addressing ambivalence about and motivation to change; and 12-step facilitation, which focuses on teaching that alcoholism is a disease that requires abstinence and affiliation with a 12-step program. Furthermore, 20 hypotheses were proposed about interactions between research participant characteristics and the particular treatment approach—that is, that individuals with certain qualities, such as antisocial tendencies or anger, would react differently to various therapies.

Most matching hypotheses were not supported, and the findings revealed that all three groups had very comparable (and good) outcomes. This result, far from being a failure, demonstrated that therapy works. Unfortunately, since all three treatment methods had identical results, no attribution could be made as to what produced these good outcomes. Project MATCH offered a strong challenge to current thinking, which was perhaps the most important result. Even for very well-characterized individuals across many dimensions, technical differences across treatments did not seem to result in different results. Furthermore, while it was not recognized at the time, it gave scientists a hint as to where they should search next. If technical differences among therapies (such as cognitive–behavioral therapy, motivational enhancement therapy, and 12-step facilitation therapy) do not account for differences in change, then it is unclear what is driving the large change that occurs in most people who seek treatment, according to the findings of the Project MATCH study (and many other studies with similar results)[3].

2. REVIEW OF LITERATURE

D J Anderson in his study discloses about the Minnesota Model of addiction therapy, often known as the abstinence model,that was developed at a state mental hospital in the 1950s by two young men, one studying to be a psychologist and the other studying to be a psychiatrist, neither of whom had previous experience treating addicts or alcoholics. The concept was initially adopted by the Hazelden Foundation, a small non-profit organization, and subsequently by other organizations throughout the nation. The mixing of professional and trained nonprofessional (recovering) personnel around the ideals of Alcoholics Anonymous was a major component of this innovative approach to addiction treatment (AA). In a 28-day inpatient environment, there was a customized treatment plan with extensive family engagement and membership in Alcoholics Anonymous both during and after treatment. This was a busy program from dawn to night, seven days a week, due to the teaching of patients and their families on the illness of addiction[4].

Raymond F Anton in his study discuses about the Minnesota Model of addiction treatment, also known as the abstinence model, that was developed in a state mental hospital in the 1950s by two young men, one of whom was studying to be a psychologist and the other to be a psychiatrist, and neither of whom had any prior experience treating addicts or alcoholics. The concept was initially adopted by the Hazelden Foundation, a small non-profit organization, and subsequently by other organizations throughout the nation. The mixing of professional and trained nonprofessional (recovering) personnel around the ideals of Alcoholics Anonymous was a major component of this innovative approach to addiction treatment (AA). In a 28-day inpatient environment, there was a customized treatment plan with extensive family engagement and membership in Alcoholics Anonymous both during and after treatment. This was a busy program from dawn to night, seven days a week, due to the teaching of patients and their families on the illness of addiction[5].

Albert-László Barabási in his study focuses on components of complex systems such as the cell, society, and the Internet that are randomly connected. An avalanche of research over the last

decade has shown that many actual networks, regardless of their age, function, or scope, converge to similar designs, a universality that has enabled academics from many fields to adopt network theory as a shared paradigm. One of the events that helped accelerate the development of network science, a new study area with its own set of problems and achievements, was the discovery of scale-free networks a decade ago[6].

3. DISCUSSION

3.1 Understanding Mechanism of Change:

When looking at treatment trials for alcoholism, several intriguing characteristics emerge. To begin with, the findings of these research are very similar. The average baseline and 12-month results in research comparing various behavioral methods, placebo-controlled pharmaceutical trials, and studies combining the two are almost similar.

Given the general skepticism regarding treatment results, overall treatment outcomes are considerably better than one would anticipate. For example, approximately a third of individuals who enroll in treatment trials go into complete remission from alcoholism within a year, while the remaining two-thirds show significant improvement, going from an average of more than 70 drinks per week to fewer than 10 drinks per week. Nonetheless, variations in results do not seem to be explained by the particular therapy administered (as long as it is of good quality, which is the case in research studies comparing treatments). These results indicate that positive transformation is either a natural component of the illness's progression or the consequence of nonspecific variables such as the instillation of hope, the decision to change, and the meeting with an empathetic therapist who is ready to assist and knows how. When offered by qualified professionals who are vetted for the capacity to establish an empathetic connection with their clients, conceptually and technically different types of psychotherapy have approximately comparable results.

When compared to placebo, some medicines, such as naltrexone and topiramate, offer significant improvements in outcomes, although these changes are minor in proportion to the total improvement in both groups. Nontreatment variables, rather than treatment-specific characteristics, or at least factors other than particular technical distinctions across treatments, may drive the change process, according to one interpretation of these results. Based on retrospective reports collected during the baseline assessment, recent reanalyses of many clinical studies looked at the history of drinking among study participants before joining the experiment. Most research participants' change process seems to have started weeks before they entered therapy, and frequently involves quitting or almost ceasing drinking prior to study entrance. As a consequence, therapy initiation may be a byproduct of rather than a cause of change. Perhaps the choice to seek therapy is a watershed moment. This is strongly suggested by a qualitative examination of participants' recollections of events in their lives previous to study enrollment. Participants reported a cycle of growing anguish and drinking, as well as peer pressure to change. Then a trigger event, such as a drunk driving charge or a domestic dispute, prompted the awareness that "I can't do this alone," prompting the choice to seek assistance. Furthermore, as the individuals progressed through the therapy process, numerous non-treatment variables had a significant impact on the path they followed. Nontreatment variables are often overlooked in treatment studies, despite the fact that they may account for a considerably larger percentage of change processes than treatment. Another source of worry is that most effectiveness trials omit many individuals who need treatment but do not satisfy strict inclusion

and exclusion criteria, raising concerns about the applicability of the findings to community clinical populations[7].

These and other results, taken together, show that many of the assumptions that have guided treatment research for decades have been incorrect or inadequate. The processes of change in heavy drinkers' drinking habit are not fully known. In addition to these results from treatment trials, it has lately become apparent that the majority of individuals with alcoholism change without ever having been exposed to therapy or AA. As a result, the processes of change for these people are little defined or understood, and greater attention to change outside of professional therapy or AA is required. Future study should also concentrate on understanding the real processes of change and how treatment providers may best help individuals reduce or eliminate excessive drinking. None of this is intended to imply that treating individuals who are addicted to alcohol is either unimportant or ineffective. Rather, advancements in treatment research have generated significant issues about how to enhance already-acceptable treatment results. Furthermore, even though the majority of individuals with alcoholism have mild-to-moderate, rather than severe, dependency, therapy is still necessary to reduce the effect on those affected and shorten the course. This is not dissimilar to a variety of other medical conditions. Most depressive episodes, for example, are self-limiting in the end, but if left untreated, they may cause significant impairment and suffering. Asthma and arthritis are examples of this. Another essential aim is to offer therapies that are both acceptable and accessible early in the course of disease, rather than waiting until chronicity and severe impairment have already developed[8].

In 2005, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) started to refocus research funding on improvements in drinking behavior. Staff from the Division of Treatment and Recovery Research convened a series of informal meetings with top scientists from many scientific fields, many of whom had no previous expertise in alcohol treatment research. They were given the above-mentioned viewpoint and asked to propose potential new paths for behavior change research. Following those discussions, a strategic research plan was created and submitted to the NIAAA National Advisory Council's Extramural Advisory Board, a subcommittee. The proposal was accepted by the Advisory Council and the NIAAA Director after further debate and modification, and it was included into the NIAAA Strategic Plan. The NIAAA Mechanisms of Behavior Change (MOBC) Initiative was established.

This program is a bold proposal to finance multidisciplinary, high-risk research initiatives that may revolutionize our knowledge of how heavy drinkers alter their behavior. Dr. Jon Morgenstern, a senior scientist involved in the process, characterized the aim as "creating the fundamental science of behavior modification." However, in this context, fundamental science encompasses not just wet-lab research but also behavioral, psychological, and social components, all of which are critical to comprehending behavior's complexity. Because impact from one level to another is bidirectional, each level of analysis (genomic, cellular, physiological, individual, and social) affects all the others in a dynamic interaction, there is no “bottom-up” assumption that the “real” determinants are genomic or neurophysiological. This system is often referred to as a complicated dynamical system. The total is greater than the sum of its parts in a complex dynamical system.

One systems theorist made the example that knowing and being able to lay out every single component of an aircraft is feasible, but it does not tell you anything about how an airplane flies or how a specific airplane would react to wind shear. With this in mind, NIAAA asked specialists in mathematical modeling of complex systems to join the project, and they have helped shape its direction and emphasis. The NIAAA MOBC Initiative has sparked many new research directions. This study is still in its early phases, therefore it may take some time to see results

and much longer to create therapeutically relevant tools as a consequence. Despite this, considerable progress has been achieved. A cross-National Institutes of Health (NIH)-MOBC Initiative comprising more than 15 NIH Institutes and Centers has emerged in the last two years, and momentum is growing. In February 2010, the National Institutes of Health (NIH) published a Roadmap call for proposals on the science of behavior change, demonstrating a long-term commitment to MOBC research[9].

3.2 Building a Scitinfically Based Continuum of Care:

According to the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), there is a wide range of drinking habits and associated risk of alcohol-related disorders among the adult population. According to NIAAA recommendations, healthy adult males should drink no more than 4 U.S. standard drinks per day and no more than 14 drinks per week, while healthy women should drink no more than 3 drinks per day and no more than 7 drinks per week. In the United States, a typical drink contains approximately 14 g absolute ethyl alcohol by volume, which is equivalent to 1.5 oz of 80-proof spirits, 12 oz of beer, or 5 oz of table wine. (It's worth noting that drink sizes vary greatly by culture.) A typical drink "unit" in Australia and the United Kingdom, for example, comprises approximately 10 g absolute alcohol by volume, equivalent to 30 cc of 80-proof spirits.) Additionally, both the daily and weekly restrictions must be adhered to in order to be considered inside the standards. Thus, someone who drank three drinks every day, as well as someone who consumed eight drinks in a week, would not be considered within these limitations. Individuals who drink in excess of the recommended amount but do not report any difficulties or symptoms linked to their drinking are thought to be at a higher risk of developing negative effects in the future. These "at-risk" drinkers are like someone who has high cholesterol but hasn't acquired coronary artery disease yet. When a person develops multiple symptoms (currently three for dependence and one for abuse), they are diagnosed with AUD. As a result, there are three types of drinkers: those who never exceed the limits, those who exceed the standards but have no present symptoms and have never had alcohol dependency, and those who have symptoms or consequences linked to their drinking and may therefore be diagnosed with a AUD. The diagnostic criteria for a AUD are now based on the Diagnostic and Statistical Manual, Fourth Edition, Text Revision (DSM–IV–TR; APA 2000) of the American Psychiatric Association (APA). For the fifth edition, the criteria have been reviewed and revised, and it is scheduled to be published in 2013. Abuse and dependency are no longer considered distinct illnesses in the newly released draft guidelines. Instead, the abuse and dependency requirements have been merged into a single AUD. This modification is based on research showing that abuse and dependency diagnoses did not function as anticipated and that a single-dimensional construct provided a simpler approach that better matched the study results.

As a result, the term AUD will be used throughout this article to refer to what are now two distinct diagnoses. In any given year, 70% of people in the United States never exceed the NIAAA recommendations, either because they abstain or drink within low-risk levels. The majority of the remaining 30% are at-risk drinkers (21%) and 4% have a AUD, which is presently classified as alcohol dependent according to the DSM–IV–TR. 3 percent of those with dependency have functional dependence, and 1% have severe recurring or chronic reliance. The following is a description of functional alcoholism: Individuals who drink more or longer than they intend to, have a strong desire to quit or cut down but struggle to do so, may drink and drive (without receiving a DWI citation), and frequently continue to drink despite physical or psychological symptoms such as a hangover, headache, poor sleep, or nausea. The majority of individuals who acquire a AUD have just three or four symptoms and their drinking does not cause significant life disruption. They don't skip work, ignore their children or other obligations, get into legal problems, or lose their jobs, for example. Only their closest friends and family members are

aware that their drinking is out of hand in many instances. Furthermore, according to NESARC, 72 percent of individuals who acquire alcohol dependency in their lifetimes have a single episode that lasts 3 to 4 years on average, after which it fades away and does not return. Recurrences affect 28% of people, with an average of five episodes each year. As a result, it seems that there are two types of this disorder: a milder self-limited version and a more severe recurring one.

This new perspective is vastly different from the conventional definition of alcoholism, which is a persistent, severe, and progressing illness. NESARC results were used to help create this new understanding. NESARC looked at the general community and found people who had struggled with excessive drinking for years but had ultimately overcome it without seeking professional assistance or joining AA. This result contrasted with earlier study attempts, which extended findings from individuals in treatment programs or AA to the broader public. As a consequence, researchers made the error of assuming that unidentified "cases" in the community were the same as those under treatment, which is obviously not the case. The same is true for any other medical condition. Only a tiny percentage of individuals with asthma, influenza, or depression need hospitalization, and this is because they have a milder, more treatment-responsive, or less complicated version of the disease. The same is true for AUDs, it turns out. Abstainers and low-risk drinkers, at-risk or high-risk drinkers, individuals with functional alcohol dependency, and those with severe recurring alcohol dependence are the four categories that emerge. Based on a huge epidemiological study dataset, this new classification gives scientists the information they need to create a continuum of care for each group.

The aim for abstainers and low-risk drinkers is to avoid a problem from developing, particularly in young people, but not solely. Generally, universal prevention takes place in areas like schools, workplaces, and health care facilities. Public awareness campaigns setting healthy boundaries and beverage labeling regulations are examples of such efforts. Consumers may use such methods to get the information they need to make well-informed choices. The present public health emphasis on overeating and obesity is a good illustration. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) has released a consumer-oriented pamphlet and associated Web site (Rethinking Drinking) containing information on defining a "normal" drink, suggested alcohol usage limits, and suggestions for reducing alcohol use. Although this information is not anticipated to have a direct impact on behavior change, it may indirectly influence drinking behavior by supporting community-wide initiatives to decrease drinking. The effectiveness of this technique has yet to be established by studies.

The aim for at-risk drinkers who do not have a AUD is to minimize the likelihood of developing downstream effects of excessive drinking later on. People with high blood pressure but no symptoms, or cigarette smokers without lung cancer or heart disease, are examples of at-risk drinkers. At-risk drinkers, fortunately, react well to a range of low-intensity treatments, such as short physician counseling and Internet-based programs like "Rethinking Drinking." Workplace efforts, toll-free telephone lines, and other low-cost high-yield approaches are likely to be effective in treating at-risk drinkers, notwithstanding the lack of research. Although most at-risk drinkers choose to cut down rather than stop, there is some indication that the drug naltrexone may be helpful in this group as well. Naltrexone decreases the "buzz" associated with alcohol use, making it simpler to drink less.

Individuals with functional AUDs seldom, if ever, attend AA or an addiction treatment program because, despite drinking more than they want, they are able to manage their lives and avoid severe problems. The age of onset ranges from late adolescence to middle life. Most people do not seek assistance at all, but they are ultimately able to overcome their obsessive drinking, either by abstaining or reducing their drinking to low-risk levels. They usually suffer for years, and

although their lives may not fall apart as a result of their excessive drinking, it may be a source of considerable worry for them and their loved ones. Individuals with functional AUDs are similar to people with severe depression or anxiety disorders in that they are able to function, but at a suboptimal level and with considerable suffering. Effective pharmaceutical therapy is available in both situations and may be given by a doctor. People with depression were seldom treated in the past. Only the most seriously afflicted were recognized and treated, similar to how AUDs are today, including hospitalization. When Prozac® was first launched in 1987, it completely altered the therapeutic landscape. More than two-thirds of individuals now get therapy for depression, typically through their primary-care doctor, because to the availability of several comparable effective, safe, and easy-to-use medicines. Psychiatrists are only consulted in the most difficult or treatment-resistant situations[10].

3.3 Reconfiguring the Treatment System:

The results must be accessible, no matter how sophisticated the study is or how effective the novel therapies that arise from it. For the most part, medical providers have been slow to accept scientific advancements made in the past 40 years. Only a small percentage of individuals who are addicted to alcohol seek or get professional help. Only a small percentage of the time are effective medicines given. Most presently available therapy is based on a paradigm that was established about 50 years ago, when scientific knowledge of drug use disorders was still in its infancy. Without access to medicines or evidence-based behavioral therapy, more than 90% of treatment facilities in the United States presently provide group counseling and AA referrals. As a consequence, the majority of customers have little say in the treatment they get. Many counselors have little or no training, and treatment program staff turnover is greater than 50% each year. Due to a persistent financial deficit, programs are unable to invest in infrastructure such as electronic medical records. Despite the fact that program staff members are frequently devoted and hardworking, the atmosphere makes delivering contemporary therapy difficult, if not impossible. More significantly, most treatment programs are based on the premise that a relatively short time of education and counseling would result in a significant change in the course of a severe chronic disease, an approach that lacks scientific support and is not utilized for other chronic illnesses. True, certain kinds of psychotherapy for psychiatric illnesses are time-limited, but this is usually done in conjunction with continuing care management by a mental health or primary-care physician. Furthermore, when a disease shows resistant to the first complete course of well-administered treatment, additional sessions of the same therapy are seldom recommended. Patients with alcoholism, on the other hand, often undertake several courses of recovery, even though they are totally useless, simply because no other options are available[11].

Another significant flaw in the present system is that it concentrates on the most seriously affected individuals those with chronic and persistent alcoholism the majority of whom have suffered catastrophic life effects. It is not designed to care for individuals with milder types of addiction. This group, which accounts for almost three-quarters of all cases, is usually functioning, and virtually all of them ultimately reach complete remission. As a result, the existing treatment system reaches a small number of individuals with addiction, offers time-limited counseling for those with severe and chronic addiction, fails to provide consumers with a treatment option, and is not set up to provide innovative research-based methods. It's past time to rethink what services should be provided, where they should be provided, and who should deliver them. Fortunately, 40 years of study has provided a strong scientific foundation for this process, as well as a framework for going ahead[7].

4. CONCLUSION

The scope of this article is too limited to do justice to the exponential growth in knowledge in neuroscience, genomics, pharmacology, psychology (including behavioral economics), social sciences, and mathematics, as well as the implications for developing new approaches to help people change their health behaviors. Some of these are summarized in other articles in this issue. This surge of information offers enormous potential for the development of innovative ways for assisting individuals in changing their health habits. Medications targeted at new targets and more direct behavioral treatments will become accessible, and they will almost certainly be much more effective than what is now available. We've created a continuum of care with a strong scientific foundation thanks to research done over the last 40 years, which is an advance over the initial therapy models produced decades ago. However, as science progresses, the complexity and difficulty of the issues to be addressed will increase. The key to substantially enhancing treatment results and decreasing suffering from alcohol-related illnesses is to combine research with a restructured treatment system capable of making new scientific discoveries quickly accessible to the public.

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