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Needed: Longitudinal Research That Can Inform Dynamic Models for the Treatment of Addiction as a Disease

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Why do some people abuse drugs? Why are some people able to stop abusing drugs while others progress to an addiction that renders them unable to discontinue drug use in spite of dire consequences? What interventions can help people stop abusing drugs? Why do many people treated for drug abuse relapse? What interventions can reduce or prevent relapse? Addiction researchers struggle with these important questions—all of which require a longitudinal perspective.

Researchers at the University of California at Los Angeles introduced the term “career” in reference to observed patterns in drug addiction behaviors and became one of the first groups to view addiction from a longitudinal perspective (McGlothlin, Anglin, & Wilson, 1978). Since then, the notion of a drug use pattern or career has been extended to observable patterns in treatment relapse (Hser, Anglin, Grella, Longshore, & Prendergast, 1997; Anglin, Hser., & Grella, 1997). Almost three decades later, the field has come to view addiction from the perspective of a chronic disease model (McLellan, Lewis, O'Brien, & Kleber, 2000; Compton, Stein, Robertson, Pintello, Pringle, & Volkow, 2005).

Developing systems of care for chronic diseases requires research that is sufficiently longitudinal in nature to enable the identification of ways to end drug use, address relapse, and sustain recovery. To date, most longitudinal projects have used periodic follow-up surveys to create a series of snapshots in time producing aggregate models of treatment and relapse. This work is exemplified by the Drug Abuse Treatment Outcomes Study (Simpson & Brown, 1998), the National Drug Abuse Treatment System Survey (D'Aunno, 2006), and the National Treatment Center Study (Roman, Ducharme, & Knudsen, 2006). These and similar studies have helped refine current methodologies and approaches. However, these studies fail to integrate individual patient level dynamics with provider system service dynamics. Methodological research focused on developing such models is sorely needed to address this gap.

Conducting individual level follow-up studies can be difficult, costly, and time consuming. Much of addiction intervention and services research is based on short-term follow-up and lacks a long-term longitudinal perspective. At the individual level, one-year follow-ups are typical. At the service delivery system level, some select studies capture follow-up data extending three to five years.

Research findings seem to suggest that these follow-up intervals are too short to develop a dynamic model to understand addiction, treatment, relapse, and recovery. For example, a recent study indicates that an average relapse cycle (time between treatment admission,

relapse, and treatment readmission) takes nine years (Dennis, Scott, Funk, & Foss, 2005). Examining two relapse cycles would require at least 12 years of data. Numerous intervening variables may affect behavior over such a long period and developing algorithms and other statistical control procedures to test hypotheses with surety can be challenging.

This special issue could not exist were it not for the long-term perspective of several notable research efforts. The work begun at UCLA in the 1970's has been pioneering in both its conceptual contributions as well as its influence on advancing methodology for analyzing and modeling relapse using periodic retrospective surveys spanning decades. Texas Christian University has been a leader in the design and conduct of large-scale, effectiveness-focused studies. The Drug Abuse Epidemiology Data Analysis Center (DAEDAC), begun in the 1960s evolved into the Drug Abuse Reporting Program (DARP) of the 1970's, Treatment Outcome Prospective Study (TOPS) of the 80's, and led to the Drug Abuse Treatment Outcome Studies (DATOS) of the 1990's which was conducted in collaboration with National Development & Research Institute and UCLA. The DATOS collaboration served as an evidentiary cornerstone to demonstrate that addiction treatment is effective. Two long-term surveys of addiction treatment delivery systems; the National Drug Abuse Treatment System Survey (NDATSS) and the National Treatment Center Study (NTCS), have helped advance the field's understanding of how policies and practices affect access to and resources for addiction treatment. Begun in 1988, the collaboration between the Universities of Chicago and Michigan known as NDATSS resulted in significant changes in methadone treatment nationally and provided information about how public health policies were affecting access to various types of treatment and related services. Begun in 1994, the University of Georgia NTCS examined privately-funded treatment systems to identify factors affecting the pace of innovations in service delivery and also shed light on how differences between private and public providers affected access to care. Most recently, a short-period, cohort-based follow-up design was introduced in 1996 by Chestnut Health Systems which began conducting quarterly patient assessments coincident with the Early Re-Intervention (ERI) study now in its ninth year. That study is yielding new insights into ways to sustain recovery, and is expanding the field's understanding of relapse cycles.

If addiction is to be studied as a chronic relapsing disease, increased follow-up periods will be necessary to advance our understanding for achieving and sustaining recovery. Advancing science in this arena will require comprehensive individually-based longitudinal datasets. Can the field wait many years to grow such data bases, or might we more quickly amass datasets that can support longitudinal research? It may be possible to create longitudinal databases in a shorter period of time. Work must continue to identify and refine approaches to mine public health archives via augmentation, integration, and other schemes to enrich longitudinal research data bases. Researchers can help provider organizations and government agencies develop longitudinal data bases that can reliably and comprehensively monitor individual addiction and treatment careers. Though rare, it is possible to build comprehensive longitudinal databases coincident with studies of brief duration by following the same patients for a longer period. Synthetic models also hold promise as a mechanism to look forward longitudinally examining the implications of dynamic simulation models (Zarkin, Dunlap, Hicks, & Mamo, 2005).

This special issue addressing longitudinal approaches to the study of drug addiction as a chronic disease is a welcome contribution to the field. Contributing authors are to be commended for their tenacity, ingenuity, and leadership. Their work is advancing our understanding of addiction, treatment, relapse, and recovery.

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