

Changes in the Epidemiology of Drug Abuse

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Reflections on 40 Years of Drug Abuse Research

Key Largo

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In the beginning...

- **40 years is a long time -- takes us to 1965.**
- **Exegesis requires us to go back another 30 years to Narco**
- **We are forever indebted to those who preceded us**
- **Jack O'Donnell -- Kentucky Addicts -- Karst Besteman conducted interviews**
- **Number KY addicts were medically maintained.**
- **Of 265 addicts 17 were physicians, pharmacists, pharmacy employees**
- **67% of men, 87% of women got narcotics legally**
- **Fred Maddux/David Desmond -- 248 opioid users in San Antonio confirmed "maturing out" hypothesis -- Charlie Winick**
- **Importance: inconsistent with "once an addict always an addict;" inconsistent with image of modal addict: inner-city minority enmeshed in a life of crime & drugs.**
- **New York City Narcotics Register (Amsel and Mandell)**

Signal Events in Epidemiology of Drug Abuse

- **Jaffe, Hughes, Crawford study in Chicago -- need for treatment reversing pervasive belief that treatment didn't work.**
- **SAODAP established -- unprecedented degrees of freedom to move things forward -- major tipping point**
- **Foundational study: Lee Robins study of Vietnam Veterans**
- **Urine testing – high rates of use**
- **Those addicted in Vietnam had much lower relapse than would be predicted from existing science**
- **People under unusual stress may be more vulnerable to use -- best predictor of using in stress environments is past use**

Signal Events in Epidemiology of Drug Abuse

- **O'Donnell, Voss, Clayton, Slatin, & Voss – nationwide study of young men**
- **Drug epidemic was not just happening among Vietnam vets – occurring in general population as well -- low relapse rate in Vietnam vets -- they were small proportion of birth cohort – Vietnam vets little effect on overall rates in US – probably only a drop in the bucket**
- **Surveillance systems: DAWN, CODAP, DARP, TOPS, DATOS, TEDS, other systems designed to track treatment – Saul Sells, Dwyane Simpson, Bob Hubbard, George Woody, Tom McLellan, Chuck O'Brien, etc.**

Signal Events in Epidemiology of Drug Abuse

- **Creation of NIDA and NIAAA gave scientific legitimacy to study of drug abuse, drug abusers, & nature, extent, correlates, causes, and consequences of drug abuse.**
- **In the early years the co-location of research and practice in NIDA provided substantial benefit to research on the epidemiology of drug abuse**

Signal Events in Epidemiology of Drug Abuse

- **NHSDA -- President's Commission on Marihuana Abuse, continuation NHSDA at NIDA & SAMHSA**
- **Monitoring the Future study, 1975 to present – annual report card, emphasis on importance of perceived harmfulness**
- **Kandel's studies -- number of interesting findings, number of ideas that are still current today**
- **Recognition of importance of the nexus between drug abuse and other co-morbidities confirmed by data from the ECA & the NCS – Jim Anthony, Bill Eaton, Lee Robins, Linda Cottler, Ron Kessler**

Signal Events in Epidemiology of Drug Abuse

- **David Nurco -- research on heroin addicts -- strong connection between drugs and crime**
- **California Civil Addict program -- Bill McGlothlin/Doug Anglin -- DUF/ ADAM**
- **Ethnographic research -- rich texture to quantitative data (i.e., Mike Agar, Dick Stephens, Ed Preble, Bryan Page, Merrill Singer, Claire Sterk, Paul Goldstein, Wayne Weibel, Bob Booth, Jim Inciardi, etc.)**
- **Community Epidemiology Work Group (CEWG) -- Nick Kozel and community correspondents -- 25 years and counting -- has spawned a number of CEWG replications in other countries.**

Signal Events in Epidemiology of Drug Abuse

- **Musto (1999):**
- **The Anti-Drug Abuse Act of 1998 requires ONDCP and its national drug control strategy to include “...comprehensive, research based, long range goals for reducing drug abuse in the United States” and “short-term measurable objectives which the Director determines may be realistically achieved.”**
- **We would be remiss if the cocaine epidemic were not mentioned as a signal event or set of events – it provided the stimulus for a great many research and other scientific endeavors and accomplishments.**

Accomplishments in Epidemiology of Drug Abuse

- **Compton et al. (2005:1494) listed major accomplishments in the epidemiology of drug use and drug use disorders:**
- **“systematic and regular monitoring of large scale shifts in the landscape of drug use, the prevalence and timing of the onset of illicit drug use, the estimation of drug use disorders in the United States, the identification of substantial comorbidity between drug use and drug use disorders with mental disorders, and the linking of drug use, especially injection drug use and high risk sexual behaviors, to the spread of HIV.”**

Issue: Sampling, coverage and non-coverage

- **NSDUH (formerly NHSDA) – military and prison population not covered**
- **MTF survey – before 1991 MTF contained sample of only 12th graders – criticism – non-coverage of dropouts – in response to criticism MTF added national samples of 8th and 10th graders**
- **Fact: percent of each cohort classified as dropout is small – even if drug use among dropouts is “through the roof,” overall prevalence rates may not change**
- **Non-coverage still a major issue in both large-scale national surveys (MTF, NSDUH)**

Issue: Broad Changes in Trend Lines

- **MTF -- rates of use went up in the 1970s and peaked**
- **From 1978 until early 1990s the rates decreased**
- **1992 -- rates increased until 1997 then decreased.**
- **Johnston et al. (2004) attribute changes in drug use largely to change in perceived harmfulness**
- **Interesting hypothesis – however, there is limited evidence in the public health literature that “knowledge” is ever sufficient to change behavior to that order of magnitude**
- **Understanding of the “macro-level why” the rates underwent these changes still non-existent**
- **We lack robust knowledge of the “etiology” of drug epidemics**

Issue: Methodological Differences in Questions Are Asked/Answered

- **Belief -- how data are collected makes a difference**
- **NSDUH uses personal interviews – MTF uses self-administered questionnaires – there are problems with presumed validity of self-report data**
- **There is a need for longitudinal research “nested” within existing national surveys – we also need collection of biomarkers from participants in those nested samples**

Issue: Age at Onset

- **According to NSDUH using data that are not “right-censored,” age at onset of drug use have not changed much in the past 25 years**
- **Notion that the age at onset has dropped into the elementary school ages is based on “right-censored” data.**
- **Onset of drug use occurs primarily in adolescence, later rather than earlier adolescence, and it increases into young adulthood where it peaks, and then declines over the life course.**

Issue: Unwillingness to Change Questions

- **Benefit -- comparability over time**
- **Questions in NSDUH on Rx drugs have changed very little while drugs in the medicine cabinet have**
- **We still know too little about relationship between medical and non-medical use of psychotherapeutic drugs**

Issue: Anticipating Epidemic Like Increases in Use of Specific Drugs

- **Remember when the word was: “ice” is coming – it’s coming – it will be here soon – it came, but not when it was predicted**
- **Consequences appear substantial, but are largely unanticipated**
- **Child welfare workers—say methamphetamine is a huge burden -- abused and neglected children**
- **Environmental -- toxic effects of methamphetamine production**

- **Why weren’t we able to better predict when the diffusion of this drug would occur, and what its social and other consequences would be?**

Issue: Anticipating Epidemic Like Increases in Use of Specific Drugs

- **How many drug epidemics in US seem to have started in rural rather than urban areas.**
- **Why -- excessive marketing, concentration of pain and the need for pain medication in certain geographic areas, savvy of pharmaceutical epidemiologists who tracked where other prescription meds (Darvon, Darvocet, Percodan, Percocet, Dilaudid) were widely used, and targeted those areas with detailing?**
- **This is an example of where the epidemiologists were not ready.**

Issue: Understanding, Predicting, and Tracking Local Epidemics

- **Just like politics – all epidemics are local**
- **Epidemics have to start somewhere – they usually don't start everywhere at once.**
- **Even “within” communities, there are different degrees of the reach and penetration of local drug epidemics.**
- **What accounts for these differences?**

Things We Didn't Do and Should Have, or Did and Shouldn't Have

- **FIRST: failure to develop mechanisms to insure that data collected in national surveys are systematically and strategically mined.**
- **SECOND: failure to use existing national surveys as the foundation for strategically determined, “nested” prospective longitudinal studies.**
- **THIRD: failure to use epidemiological studies as vehicle by which individual level data are linked to neighborhood & other types of contextual & environmental data**

Things We Didn't Do and Should Have, or Did and Shouldn't Have

- **FOURTH: failure to link supply reduction efforts with demand reduction efforts -- minimal scientific rigor on supply side of fence –**
- **Scientific community skewers its scientists for minor infractions of scientific rigor while there is virtually no science underpinning the supply side of drug abuse**
- **This is a major missed opportunity**

Things We Didn't Do and Should Have, OR Did and Shouldn't Have

- **FIFTH: inordinate focus on youth and initiation -- relative failure to study continuation, progression that may or may not lead to dependence, regression, cessation, and relapse.**
- **Trajectories & careers of drug users are topics we could have/should have spent a great deal more effort on.**
- **Instead of focusing so much attention on the gateway hypothesis, we could have been spending far more attention on simultaneous use of multiple drugs.**

Things We Didn't Do and Should Have, OR Did and Shouldn't Have

- **SIXTH: inordinate attention given to marijuana**
- **From population-based public health perspective it is difficult to defend attention given to marijuana when nicotine accounts for so much ill health and mortality**
- **While the drug abuse community has been overwhelming source of research on nicotine, tunnel vision focus on illicit drugs has been a lost opportunity to have a huge impact on health and health care in the US and globally**
- **SEVENTH: failure to institute and implement an adequate series of ethnographic field stations that, together with more traditional quantitative approaches to epidemiology, could have provided a much more robust understanding of drug abuse.**

Things We Didn't Do and Should Have, OR Did and Shouldn't Have

- **EIGHTH: failure to explore health disparities in epidemiology**
- **Why are drug use rates lower among African-American youth than Anglo youth, yet higher among African-American adults than Anglo adults?**
- **One of the strongest & most consistent correlates/predictors of differences in rates of drug abuse is SES**
- **6 years into 21st century and we seem content to use measures of SES that were first developed in the 1960s -- are there new indices of SES?**
- **Why haven't we been exploring the independent variable side of the equation as vigorously as we have been pursuing the dependent variable side?**

Things We Didn't Do and Should Have, OR Did and Shouldn't Have

- **NINTH: interaction epidemiological research with public policy.**
- **Musto said: “The policy maker’s role is to set the agenda for solving a problem of public interest. The policy maker may have a strong appreciation of science but feels compelled to solve or ameliorate problems in a short period of time.**
- **The epidemiologist is interested in seeking knowledge.**
- **He/she has neither the same political nor time constraints experienced by the policy maker.**
- **These role differences influence the way each group views the drug abuse phenomenon, the methods used to gather information to assess the phenomenon and the interpretation of the results of this information gathering process.”**
- **We are all pretty good at the politics of science, however, it may be the science of politics that has the biggest potential to influence the public health problems we know so well and care so much about.**

The Future

- **There will be an increasing emphasis on “analytical” epidemiology**
- **There will be increasing recognition that epidemiology is integrally connected to studies of the etiology of drug use, abuse, and dependence**
- **There will be increasing use of the impressive tool box of techniques that are not yet widely used in drug abuse epidemiology (i.e., relative risk, population attributable risk, etc.)**

The Future

- **AJP**Psychiatry, Insel and Collins, April 2003: Having the map of the human genome is like have the white pages of the telephone book – its great if you know who you want to call.
- If a system is broken or not functioning properly, we need the yellow pages, plumbers, electricians, etc. (proteomics).
- Because the environment can alter gene expression, epidemiologists have the most to contribute to a better knowledge of environmental contexts – more emphasis on g x g, g x e interactions
- Neuroscience and Epidemiology – Insel and Collins say that in 2053 (100th anniversary of double helix), the question will be: why were scientists in early part of the 21st century so interested in dopamine and serotonin – greater focus on other areas of the brain and other neurotransmitter systems

The Future

- **Neuroscience and Epidemiology – Insel and Collins say that in 2053 (100th anniversary of double helix), a major question will be: why were scientists in the early part of the 21st century so interested in dopamine and serotonin**
- **In the future there will be a greater focus on other areas of the brain and other neurotransmitter systems**
- **Epidemiology data collection systems will be routinely collecting biomarker data and, using portable imaging techniques, “real time” data on brain activity**

The Future

- **Drug use happens in “real time” to “real people” embedded in “real world” contexts**
- **Epidemiology and treatment – integration of treatment epidemiology with epidemiology from general population surveys and data collected over much shorter time periods**
- **Epidemiology and prevention – integration of prevention and epidemiology with data collected over much shorter time periods**

The Future

**40 years is a short period of time in science –
we have all benefited from standing on the
shoulders of the intellectual giants who
preceded us**

**It is the obligation and privilege of this
generation to provide the scientific
shoulders for the next generation of scholars
and scientists**