

ABSTRACT: 2016 ELAM Institutional Action Project Symposium

Project Title: To Develop the Nebraska Center for Substance Abuse Research (NCSAR)

Name and Institution: Shilpa Buch, PhD, Professor and Vice Chair of Research; Department of Pharmacology & Experimental Neuroscience; Director NCSAR UNMC, Omaha, NE

Collaborators: Bradley Britigan, MD, Dean, College of Medicine; **Collaborators:** Steve Lisco, M.D. (Chair Anesthesiology), Steve Wengal, M.D. (Chair Psychiatry) and Ali Khan, M.D., MPH (Dean, College of Public Health)

Background: Drug addiction (DA) caused by abuse of substances such as alcohol, opiates and cocaine continues to emerge as a serious public health problem affecting the health, social and economic fabric of all societies in the USA and globally - it has no borders and does not discriminate. Many of the nation's top health problems including cancer, cardiovascular and infectious diseases are directly linked to DA. Furthermore, addiction goes hand-in-hand with mental health. This is of special concern in the aging population who face increased incidences of mental illnesses such as Alzheimer's/Parkinson's diseases and depression. In fact, almost 50% of individuals with severe mental health disorders have a co-morbidity of substance abuse; and almost 37% of alcohol abusers and 53% of drug abusers have at least one serious mental disorder. Despite the staggering numbers of affected individuals, effective treatment modalities for preventing/treating drug addiction remain limited. **This necessitates an urgent need in the field. Strategies enhancing research capacity in the area of DA and developing educational programs geared at uprooting substance abuse problems will benefit society.**

With this in mind, the University of Nebraska, Board of Regents approved NCSAR in July 2015. The center serves as a nexus for enhancing research by recruiting faculty, postdocs and students while also aiming to build bridges with clinical departments to promote benefits of academic medicine at UNMC.

Purpose/Objectives: The NCSAR mission is "to alleviate the burden of substance abuse and thereby, health care costs, in the state of Nebraska through innovative collaborative research, premier education programs, top-notch quality patient care and outreach to the drug abusing/underserved populations." NCSAR objective is to promote multidisciplinary neuroscience research activities at UNMC to prevent, treat and diagnose neurologic disorders in the context of substance abuse. The Center will provide leadership, mentoring, and infrastructure to build upon established research excellence affecting early career faculty development and high-impact discoveries.

Methods/Approach: A multipronged approach is to develop, grow, and sustain the activities of NCSAR. This involved buy in from various stakeholders: 1) Dean, Vice Chancellor of Research and department chair for faculty recruitment. This process involved space and startup fund negotiations; 2) Partnering and collaborating with clinical departments at UNMC that involved initiating a dialogue with chairs of anesthesiology and psychiatry; 3) Partnering with College of Public Health (COP), which involved buy in from the COP Dean; 4) Cross-campus collaborations that included dialogue with Boys Town and University of Nebraska-Lincoln campuses; and 5) Initiating philanthropic efforts for continued success of NCSAR.

Outcomes and Evaluation Strategy: Various successful outcomes have come to fruition. . NCSAR faculty were recruited to increase research capacity. Active collaborations were initiated with clinical departments and involving in the COP health initiative on reducing binge drinking in Neb, along with participation in the UNL COBRE grant focused on rural drug addiction issues. The NCSAR kick off symposium was October 2015. Leaders in the addiction field were invited to present their work. NCSAR newsletter and the website have been launched to disseminate awareness about DA.

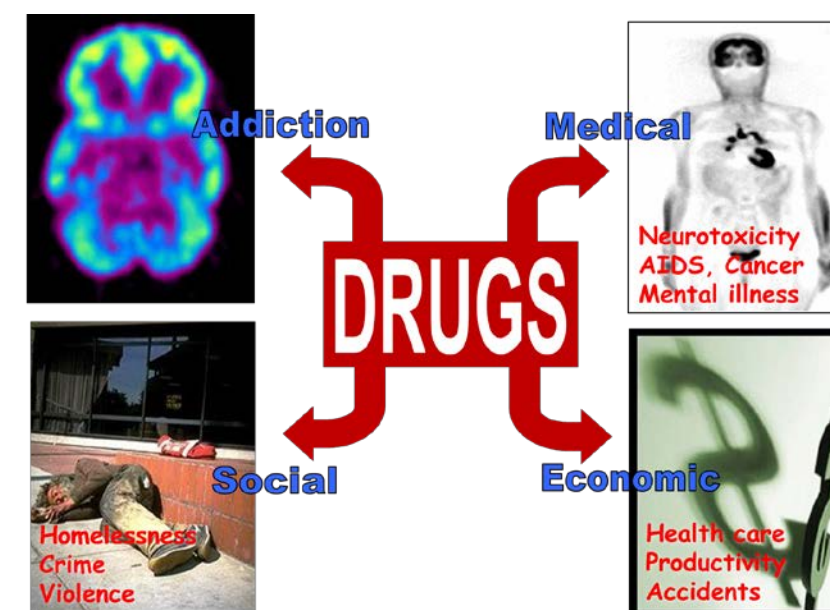
Shilpa Buch, Ph.D.

Professor, Vice Chair for Research, & Director, NCSAR,
Department of Pharmacology and Experimental Neuroscience,
University of Nebraska Medical Center, Omaha, N 68198

Background/Challenge/Opportunity

The Problem

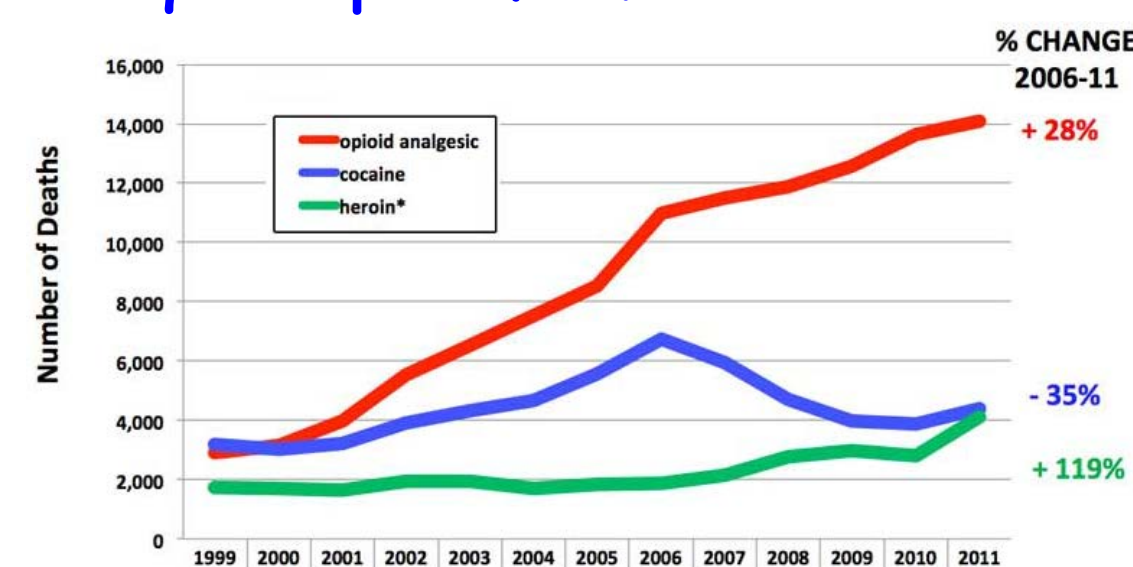
- Effects of drug abuse (DA) are wide-ranging and affect people of all ages.
- DA is linked to a variety of health problems, including HIV/AIDS, cancer and heart disease.
- DA is also linked to homelessness, crime, problems with keeping a job and violence.



Statistics

- High rates of binge drinking and Meth abuse in Nebraska.
- Pine Ridge Reservation has the highest rate of fetal alcohol syndrome.
- In Nebraska, 29.5% or nearly one in three sixth to 12th grade students use alcohol.

Prescription-opioid abuse has quadrupled from 1999-2011



DA does not occur in a vacuum



DA impacts healthcare costs

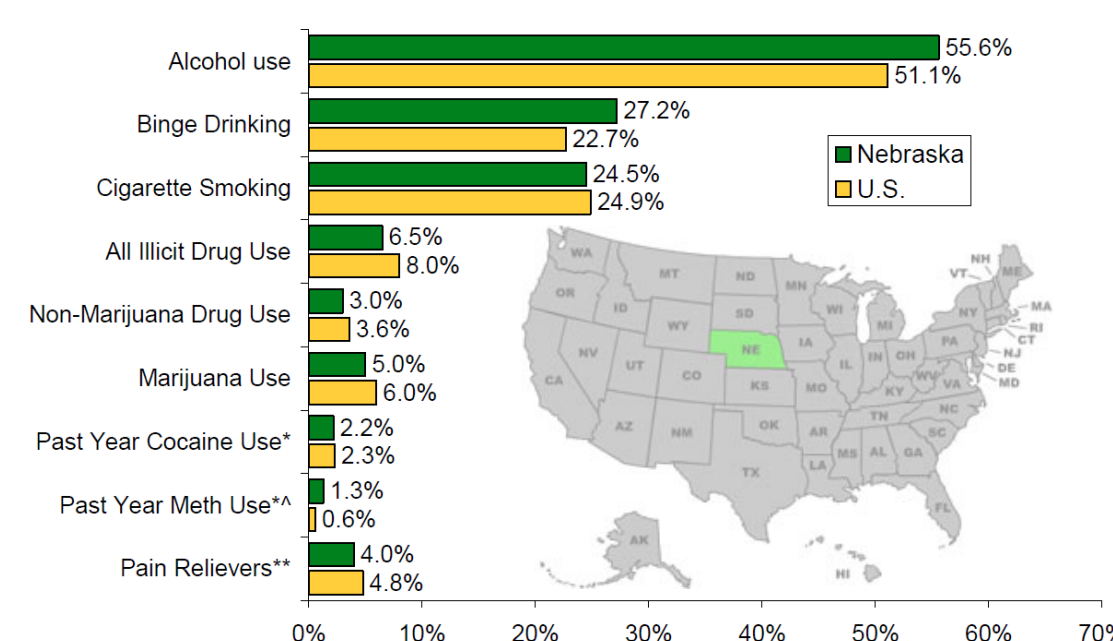
Estimated Economic Cost to Society Due to Substance Abuse and Addiction:

Illegal drugs:	\$181 billion/year
Alcohol:	\$185 billion/year
Tobacco:	\$158 billion/year
Total:	\$524 billion/year

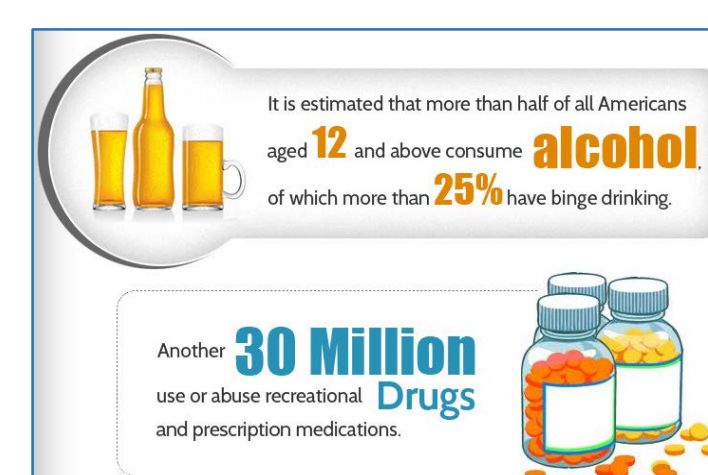
DA does not discriminate



Challenges



High prevalence of binge drinking, alcohol & marijuana abuse in Nebraska.

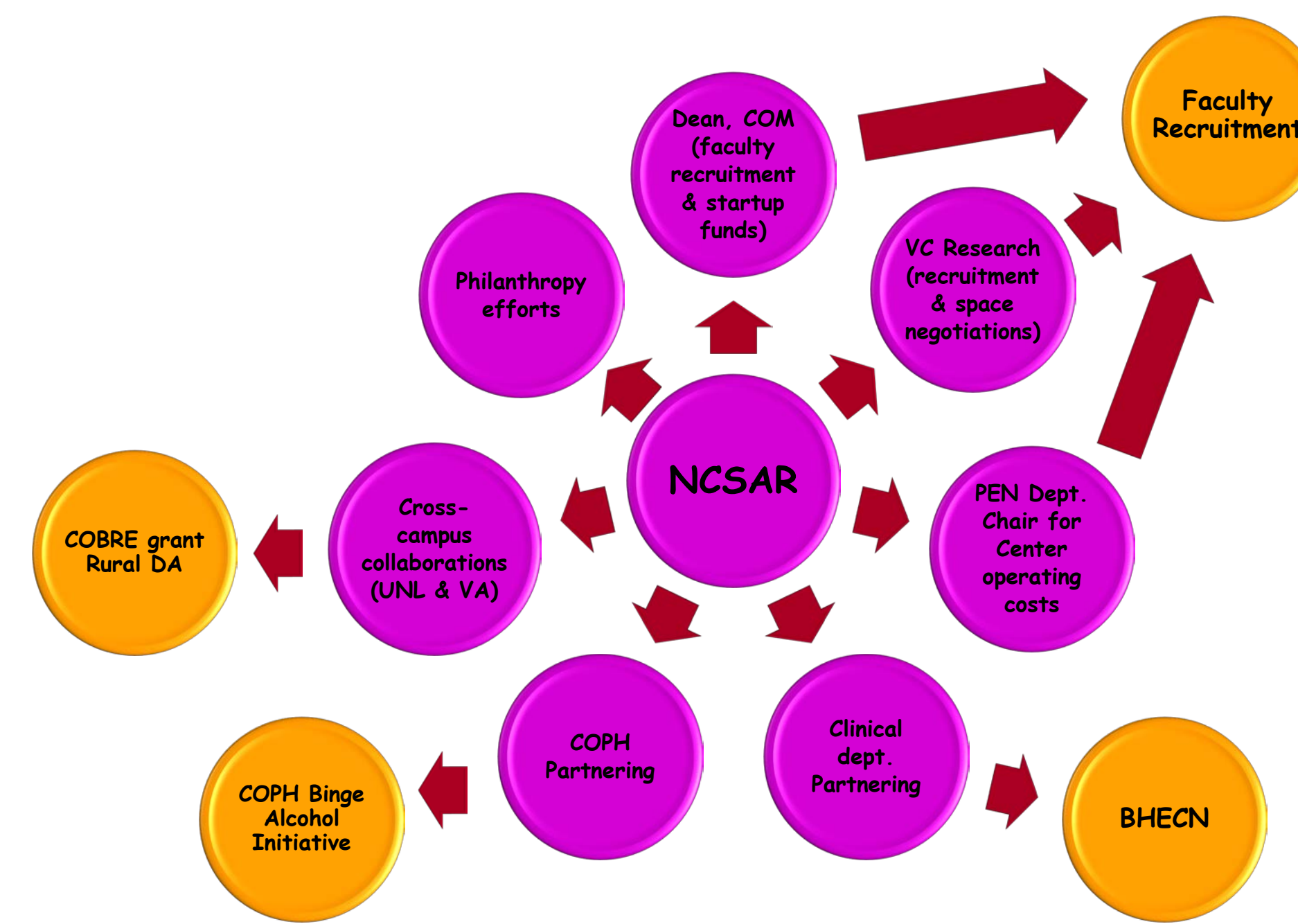


Purpose/Objectives

The mission of NCSAR is "to alleviate the burden of substance abuse and thereby, health care costs, in the state of Nebraska through innovative collaborative research, premier education programs, top-notch quality patient care, and outreach to the drug abusing/underserved populations."

Methods/Approach

A multi-pronged approach was used to develop, grow, and sustain the activities of NCSAR. Buy-in from various stake-holders was strategized.



Outcomes/Evaluations

- Procured NIH grant with India on DA
- Recruited associate professor
- Mentored NIDA Fellowship to Dr. Ernest Chivero
- Publications

1. NCSAR Inaugural Event

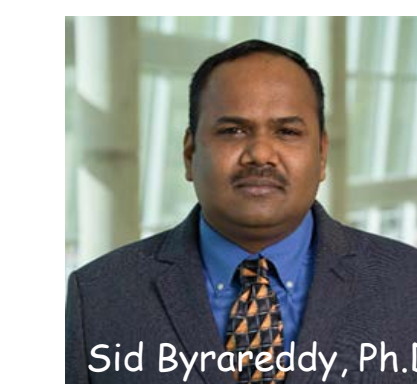


2. Collaborations

- Active collaborations initiated with clinical departments and College of Public Health initiative on reducing binge drinking in Nebraska,
- Invited to participate in the UN Lincoln campus COBRE grant on rural drug addiction.

Outcomes/Evaluations

3. Faculty Recruitment



4. Mentored Fellowship



5. Publications

- Cocaine-mediated microglial activation involves the ER stress-autophagy axis. *Autophagy*. 2015;11:995-1009. (I.F: 11.753)
- Cocaine-mediated induction of microglial activation involves the ER stress-TLR2 axis. *J Neuroinflammation*. 2016;13:33. (I.F: 5.408)
- Role of sigma receptor in cocaine-mediated induction of GFAP: Implications for HAND. *Mol Neurobiol*. 2016;53:1329-42. (I.F: 5.137)
- Cocaine induces astrocytosis through ER stress-mediated activation of autophagy. *Autophagy*. 2016 (accepted). (I.F: 11.753)

6. Skills Developed

- ✓ Networking
- ✓ Negotiation
- ✓ Team building

Summary

- ✓ NCSAR was successfully launched with the inaugural kick-off
- ✓ Recruited faculty in DA to enhance research capacity.
- ✓ Collaboration(s) within campus and internationally.
- ✓ NCSAR recently partnered with Behavioral Health Education Center of Nebraska (BHECN).

Next Steps

- Foster basic and clinical bidirectional bench-to-bedside research collaborations.
- Develop educational programs to bring DA awareness.
- Develop philanthropic support.

Mentors/Collaborators

Mentor: Bradley Britigan, M.D., Dean, College of Medicine, UNMC
Collaborators: Steve Lisco, M.D. (Chair, Anesthesiology), Steve Wengal, M.D. (Chair, Psychiatry), and Ali Khan, M.D., MPH (Dean, College of Public Health)

Acknowledgments

Dean's Business Office, College of Medicine, UNMC
 Department of Pharmacology and Experimental Neuroscience, UNMC

Presented at the 2016 ELAM® Leaders Forum