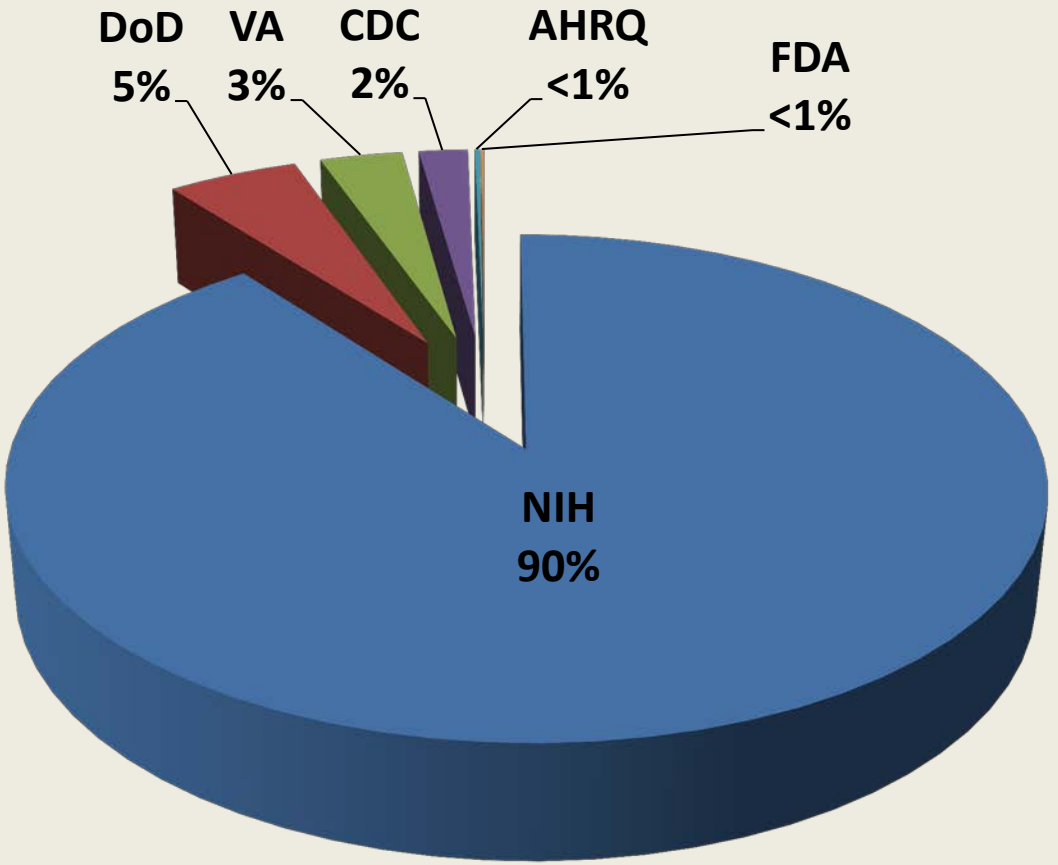
Overview of the 2011 Federal Pain Research Portfolio Analysis

- *Agency for Health Care Research and Quality (AHRQ)*
- *Centers for Disease Control (CDC)*
- *Department of Defense (DoD)*
- *Food and Drug Administration (FDA)*
- *National Institutes of Health (NIH)*
- *Veterans Administration (VA)*

Total Pain Research Expenditures by Department/Agency in 2011



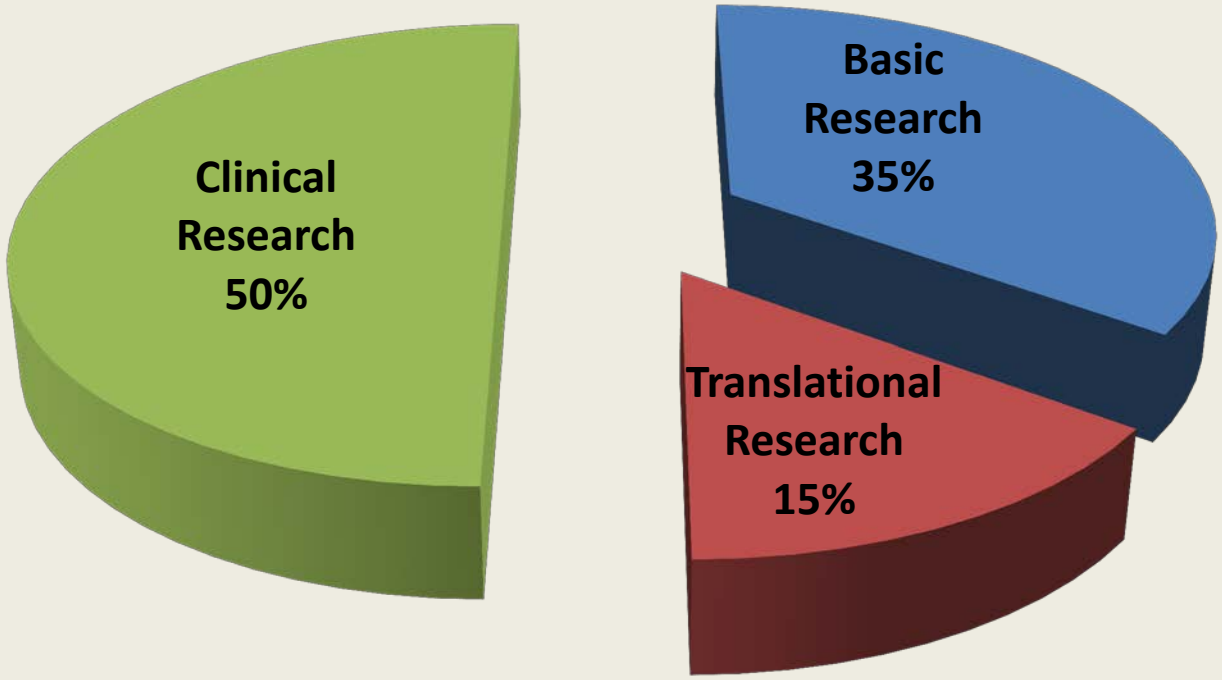
- NIH ~$386M*
- DoD ~$21M
- VA ~13.4M
- CDC ~$8M
- AHRQ ~$0.9M
- FDA ~$0.5M

- Total $429,829,185

**NIH Reporter data only*

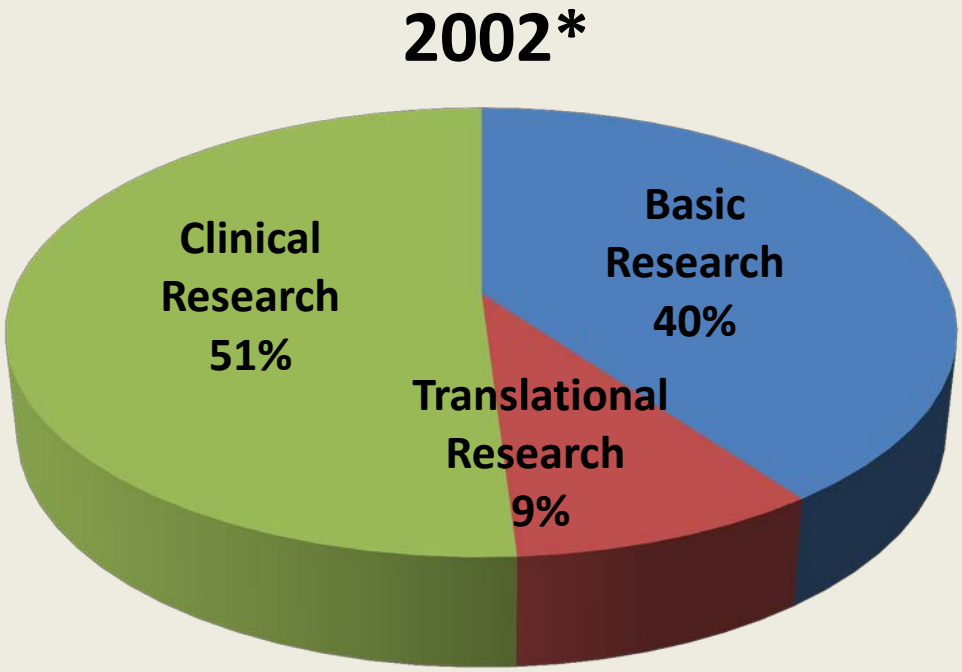
The Interagency Pain Research Coordinating Committee

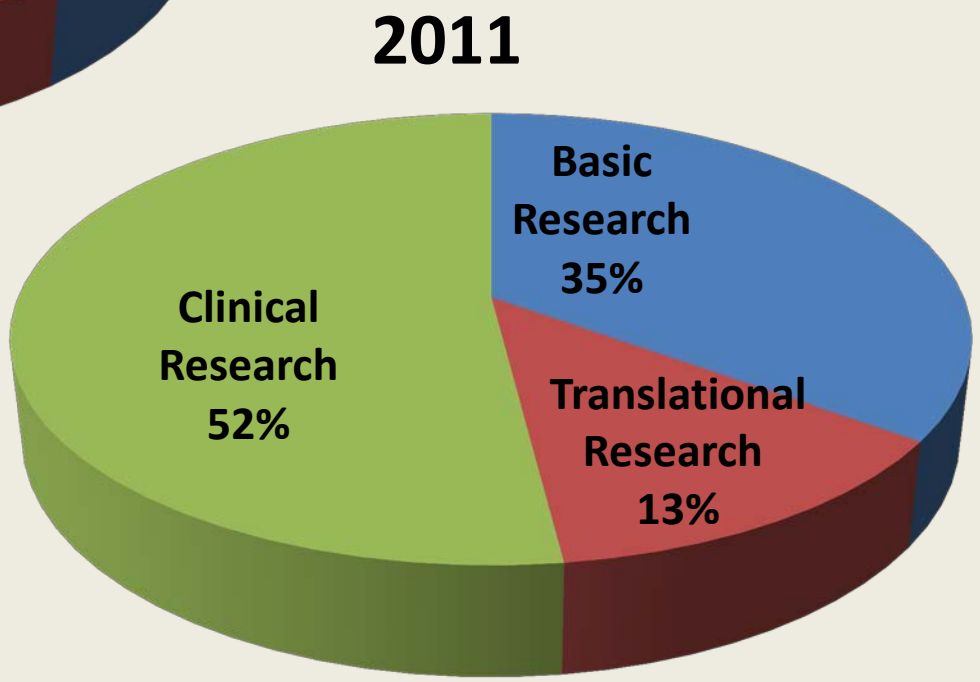
Total Pain Research by Primary Code (2011)



- Clinical ~$227M
- Basic ~$155M
- Translational ~$66M

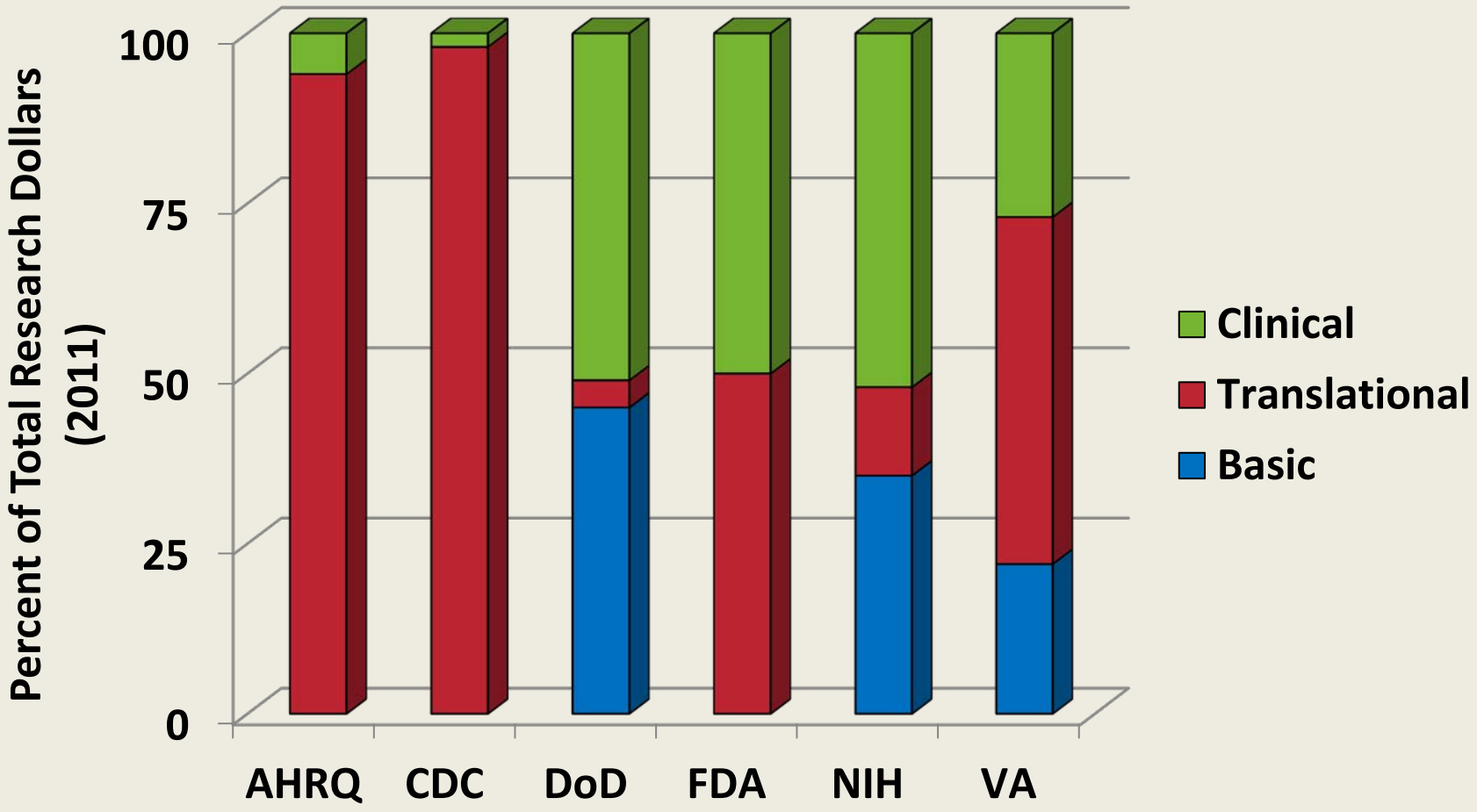
NIH Pain Research Trends by Primary Code





*Total federal data not available for 2002

Percent of Agency Pain Research by Primary Code (2011)



Total Pain Research by NIH IC (2011)

Institute or Center	Percent of NIH Pain Funding (2011)
NINDS	20%
NIAMS	15%
NIDA	11%
NCCAM	8%
NIDDK	8%
NIDCR	7%
NCI	6%
NINR	5%
NIA	4%
NICHD	3%
NHLBI	2%
NIGMS	2%
NIMH	2%
RMAP	2%
NIDCD	1%
NCRR	1%
FIC	<1%
NCMHD	<1%
NEI	<1%
NIAAA	<1%
NIAID	<1%
NIBIB	<1%
NIEHS	<1%
NLM	<1%
OD	<1%

Total Pain Research Expenditures by Secondary Code (pg 1/2)

Secondary Code	Total Costs ($M)	Percentage of Total Costs
➢ Neurobiological/glial mechanisms of nociception and pain	81.5	18%
➢ Non-pharmacological mechanisms and treatment	53.6	12%
➢ Pharmacological mechanisms and treatment	38.3	9%
➢ Biobehavioral and psychosocial mechanisms and treatment of pain	29.6	7%
➢ Pain outcomes assessments and measures, and novel health information technology as tools for decision making support of pain management	21.6	5%
➢ Genetics and genomics of nociception and pain	19.0	4%
➢ Analgesic development	17.9	4%
➢ Mechanisms of, and treatments for, transitions in pain phases	17.6	4%
➢ Development and validation of animal and human pain models	17.4	4%
➢ Unique populations	14.7	3%
➢ Comparative effectiveness research	14.6	3%
➢ Training in pain research	13.3	3%
➢ Pain education	12.0	3%
➢ Development of device and therapy delivery systems	12.0	3%
➢ Diagnosis/case definitions	10.8	2%

Total Pain Research Expenditures by Secondary Code (pg 2/2)

Secondary Code	Total Costs $M	Percentage of Total Costs
➢ Pain and other non-pain comorbidities	10.1	2%
➢ Pain and women's and minority's health research	9.5	2%
➢ Pain prevention	7.1	2%
➢ Pain and substance use and abuse/addiction	7.0	2%
➢ Epidemiology of pain and pain disorders	6.2	1%
➢ Chronic overlapping pain conditions in an individual	5.6	1%
➢ Other "omics" of pain	5.5	1%
➢ Development of informatics, data bases, and information technologies as tools for pain research	5.5	1%
➢ Medical management of pain	4.4	1%
➢ Sex and gender differences in pain	4.0	1%
➢ Pain and trauma	3.4	1%
➢ Analgesic drug safety	3.0	1%
➢ Health disparities in pain, pain management, and access to care	2.4	1%
➢ Health care utilization	1.0	<1%

Total Pain Research Identified (number of grants) by Check List Expansion

Definition # 15 Pain Education (N* = 36 applications)

a) Health Care Provider- 16
b) Caregiver- 7
c) Patient- 10
d) Public- 6

Definition # 18 Pain & Womens' & Minorities' Health Research (N*= 22 applications)

a) Women-18
b) Minorities-10

Definition # 19 Unique Populations (N*= 78) applications

a) Pediatric- 22
b) Elderly- 33
c) End of Life- 22
d) Disabled- 1
e) Military- 6

Definition # 20 Sex and Gender Differences (N* = 22 applications)

a) Male-19
b) Female-20

* N total for definition and for sum of check boxes do not match because multiple boxes could be checked)

Pain Conditions by Percent of Projects (pg 1/3)

Pain Condition	Percent of projects
Osteoarthritis pain	7%
Cancer pain	5%
Low back pain	5%
Neuropathic pain (non-specified)	4%
Irritable bowel syndrome (and other GI pain)	4%
Headache	3%
Sickle cell pain	2%
Other musculoskeletal pain	2%
Painful Diabetic neuropathy	2%
Trauma pain	2%
Orofacial pain (neural and muscular)	2%
Rheumatic pain	2%
	N=1239

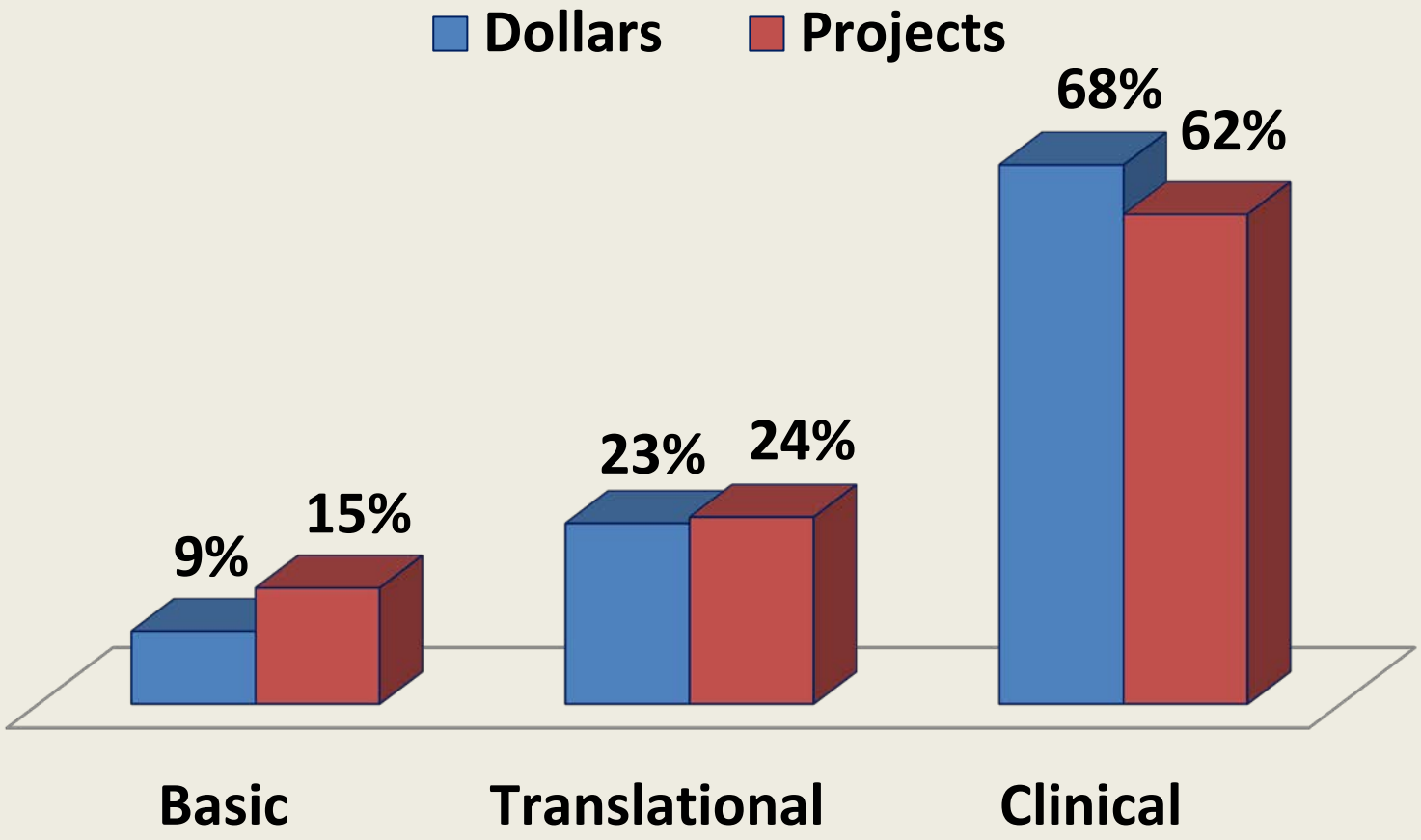
Pain Conditions by Percent of Projects (page 2/3)

Pain Condition	Percent of projects
Interstitial cystitis	1%
Visceral pain (non-specified, pancreatitis, prostatitis)	1%
TMJD	1%
Peri- and post- operative pain	1%
Fibromyalgia	1%
SCI pain	1%
Training in anesthesia	1%
Pelvic pain (non-specified)	1%
HIV aids painful neuropathy	1%
Phantom pain	1%
Medication and treatment induced pain	1%
Post herpetic neuralgia	1%
CFS	1%
Central pain	1%
Chronic regional pain syndrome	1%
Neuropathic cancer pain	1%
	N=1239

Pain Conditions by Percent of Projects (pg 3/3)

Pain Condition	Percent of Projects
Burn pain	<1%
Endometriosis	<1%
Neck pain	<1%
Ocular pain	<1%
Procedural pain	<1%
Dental and intraoral pain	<1%
Pain and sleep disturbance	<1%
Carpal tunnel and other nerve entrapments	<1%
Vulvodynia	<1%
Cardiac pain	<1%
Charcot-marie tooth	<1%
Sciatica	<1%
Nociception	17%
Not pain condition specific	10%
	N=1239

Osteoarthritis Pain Research by Primary Code



Osteoarthritis Pain Research by Secondary Code (% of Projects)

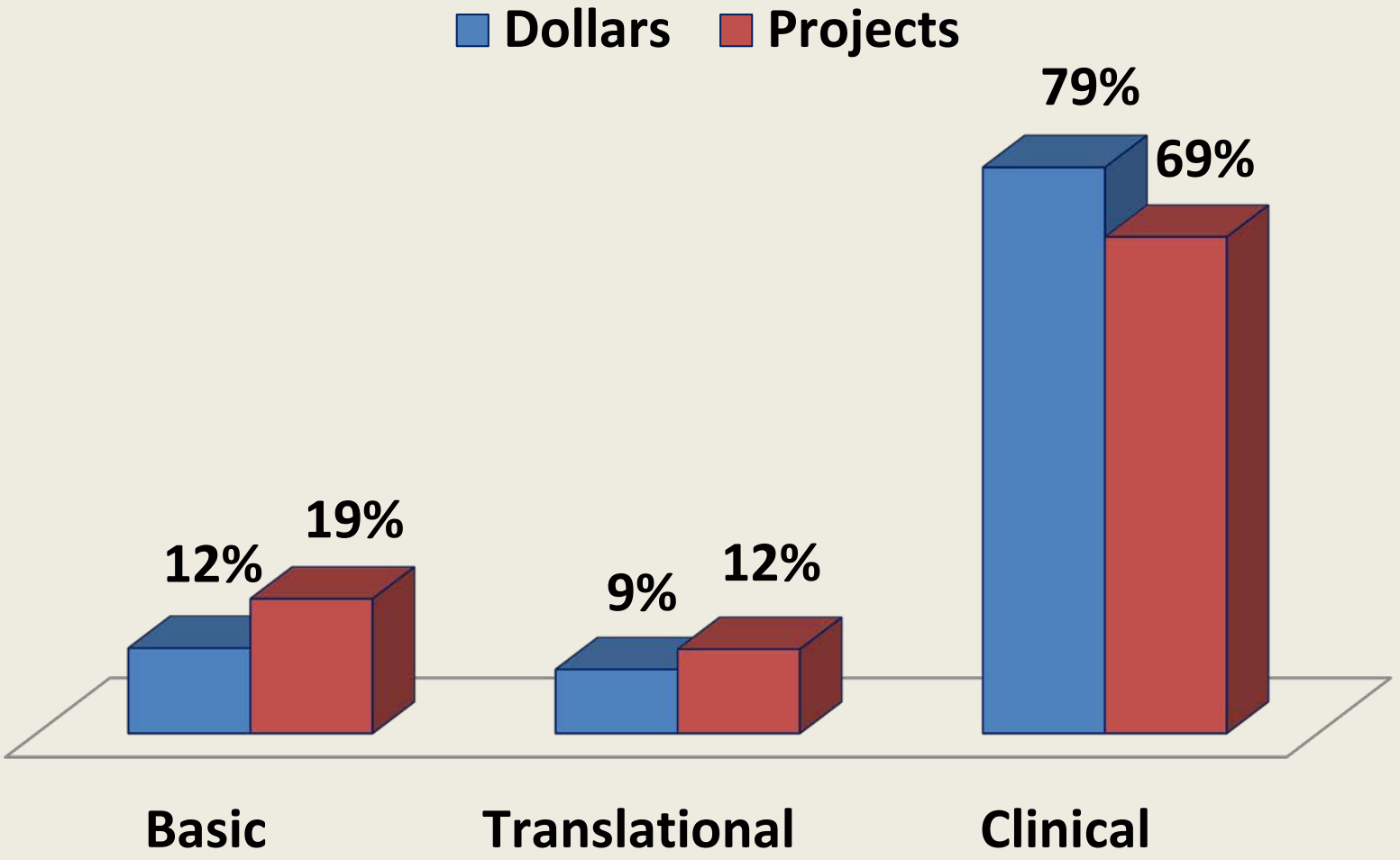
Secondary Code	% of Projects
8. Non-pharmacological mechanisms and treatment	28%
6. Diagnosis/case definitions	14%
1. Neurobiological/glial mechanisms of nociception and pain 19. Unique populations[1]	8% 8%
9. Biobehavioral and psychosocial mechanisms and treatment of pain	7%
13. Pain outcomes assessments and measures, and novel health information technology as tools for decision making support of pain management	6%
3. Other "omics" of pain 7. Pharmacological mechanisms and treatment 15. Pain education[2] 25. Pain prevention	5% 5% 5% 5%
4. Mechanisms of and treatments for transitions in pain phases	3%
28. Training in pain research	2%
Others	<2% each

[1]Unique populations: elderly-11, pediatric-1

[2]Pain education: patient-6, public-6, caregiver-1, health care provider-1

N=104

Cancer Pain Research by Primary Code



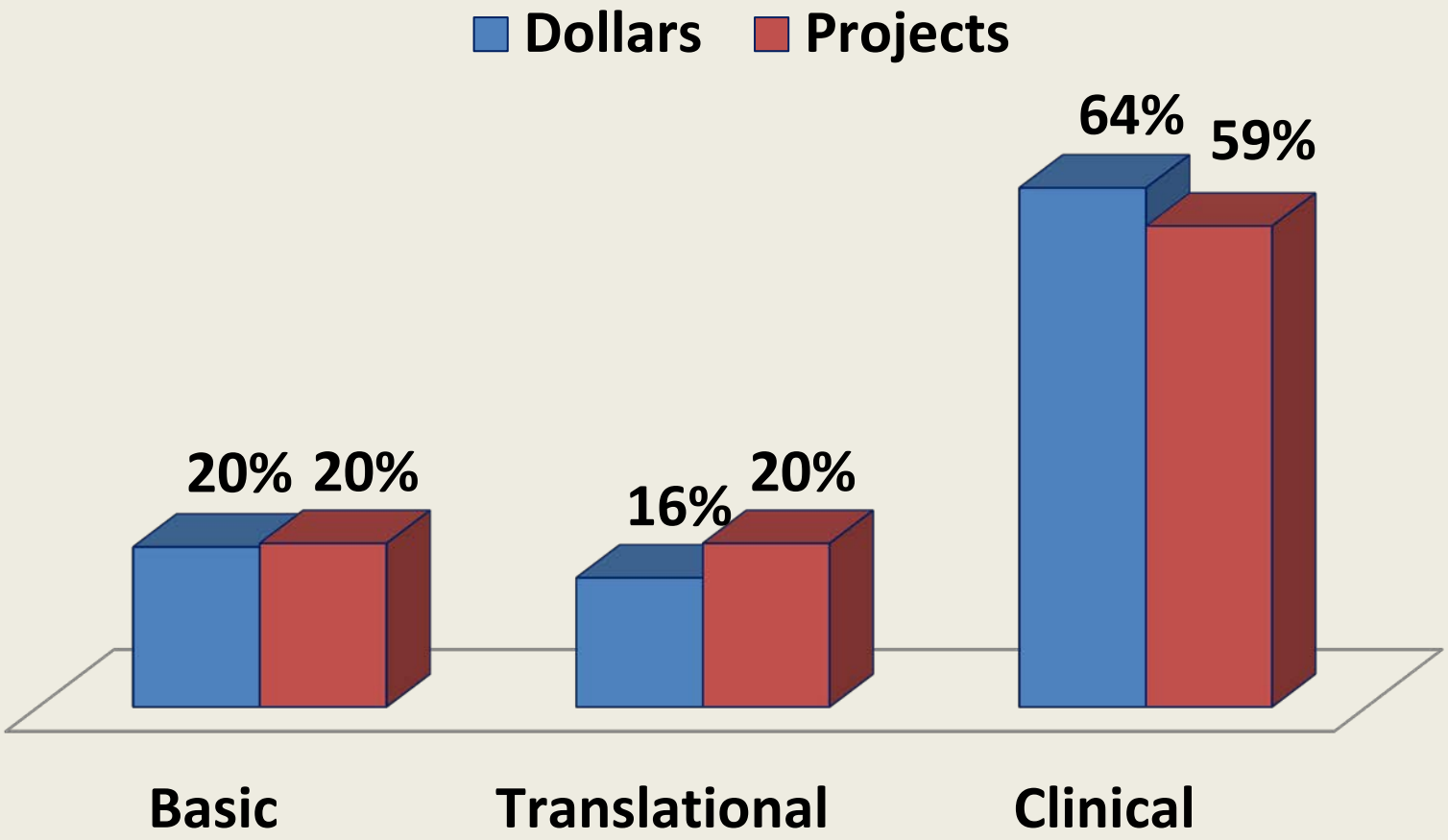
Cancer Pain Research by Secondary Code (% of Projects)

Secondary Code	% of Projects
19. Unique populations[1]	13%
1. Neurobiological/glial mechanisms of nociception and pain	12%
7. Pharmacological mechanisms and treatment	12%
8. Non-pharmacological mechanisms and treatment	11%
15. Pain education[2]	10%
9. Biobehavioral and psychosocial mechanisms and treatment of pain	9%
17. Health disparities in pain, pain management, and access to care	5%
2. Genetics and genomics of nociception and pain	4%
5. Development and validation of animal and human pain models	4%
10. Medical management of pain[3]	4%
4. Mechanisms of and treatments for transitions in pain phases	2%
12. Development of device and therapy delivery systems	2%
13. Pain outcomes assessments and measures, and novel health information technology as tools for decision making support of pain management	2%
18. Pain and women's and minority's health research[4]	2%
28. Training in pain research	2%
Others	<2% each

[1]Unique populations: end of life-12, pediatric-5, elderly-2, disabled-1
[2]Pain education : health care provider-8, caregiver-3, patient- 2
[4]Pain and women's and minority's health research projects: women-2, minorities- 2
[3]Medical management of pain projects: team based- 3, self- 2

N=70

Low Back Pain Research by Primary Code



Low Back Pain Research by Secondary Code (% of Projects)

Secondary Code	%of Projects
8. Non-pharmacological mechanisms and treatment	26%
9. Biobehavioral and psychosocial mechanisms and treatment of pain	12%
13. Pain outcomes assessments and measures, and novel health information technology as tools for decision making support of pain management 21. Comparative effectiveness research	8% 8% 8%
1. Neurobiological/glial mechanisms of nociception and pain	6%
4. Mechanisms of and treatments for transitions in pain phases 5. Development and validation of animal and human pain models 19. Unique populations[1]	4% 4% 4%
7. Pharmacological mechanisms and treatment 14. Development of informatics, data bases, and information technologies as tools for pain research 28. Training in pain research	3% 3% 3%
Others	<3% each

[1]Unique population projects: elderly-4

N=68

Moving Forward: Lessons From the Inaugural IPRCC Meeting

- Shared areas of research interests
- Established data bases, repositories, registries
- Successful partnerships

Basic and Translational Research

- Molecular mechanisms of nerve injury induced pain. **DoD, NIH**
- Mechanisms and long term consequences of acute trauma and disease that lead to chronic pain. **NIH, VA**
- Quality of life and pathobiology of overlapping chronic pain and non-pain conditions. **DoD, NIH, VA**
- Drug discovery, development and preclinical testing of novel analgesics, including alternatives to opioids, and analgesic delivery systems for acute trauma pain and chronic pain. **DoD, NIH, VA**
- Therapy development for restoration of nervous system function after nerve injury. **NIH, VA**

Clinical Research

- Evaluation of pharmacological therapies, behavioral interventions, and adjunct therapies for low back pain. **AHRQ, DoD, NIH, VA**
- Evaluation of prescription analgesics and prevention and management strategies for opioid use and abuse. **DoD, NIH**
- Pain and QOL assessment, pain management, and pain education in the elderly. **NIH, VA**
- Tools and registries for pain assessment and outcomes. **DoD, NIH**
- Evaluation of therapies for musculoskeletal disorders and osteoarthritis pain. **AHRQ, NIH**

Epidemiology and Health Disparities

- Trends in use and abuse of prescription and OTC analgesics and ER and hospitalizations related to analgesic use. **CDC, FDA**
- Surveillance of health practices and risk behaviors relevant to cancer pain and arthritis from community to population studies. **CDC, NIH**
- Surveillance of health practices, risk behaviors, and burden of disease relevant to chronic pain conditions in adults, veterans, and the elderly. **CDC, NIH, VA**
- Tracking long-term outcomes (PTSD, chronic pain) as a consequence of acute trauma (blast, burn, amputation). **DoD, VA**
- Disparities in access to and delivery of services to manage acute pain, lower back pain, cancer pain, and arthritis. **CDC, NIH, VA**

Training, Education, and Dissemination

- Career development programs in pain research. **NIH, VA**
- Training for addiction medicine skills; educating opioid prescribers on opioid utilization and abuse prevention. **FDA, NIH**
- Training in acute pain management and anesthesia. **DoD, NIH**
- Academic details and curriculum tools for training in chronic pain management for health care providers. **CDC, DoD, NIH, VA**
- Pain management and educational websites. **DoD, NIH, VA**
- Workshops, seminars, white papers, and symposia. **DoD , NIH, VA**

Established Databases and Registries

- **CDC** The Behavioral Risk Factor Surveillance System (BRFSS)
- **FDA, California Pacific Medical Center** REACT (analgesic clinical trials) Data Base
- **FDA** ACTTION clinical trials data base
- **NIH** Osteoarthritis Initiative Biospecimen Repository

Successful Public-Private Partnerships

- **CDC and the American Cancer Society:** Co-operative agreement addresses pain and palliative care
- **DoD and the Samueli Institute:** To develop an acupuncture curriculum and disseminate acupuncture services for pain management throughout the DoD
- **FDA and the University of Rochester et al.:** Analgesic Clinical Trial Translations, Innovations, Opportunities, and Networks to streamline the discovery & development process for new analgesics
- **NIH, academia, and industry:** The Osteoarthritis Initiative to develop a public-domain research resource to facilitate the scientific evaluation of biomarkers for OA onset and progression
- **VA, the Donaghue Foundation and Mayday Fund:** To explore implementation of Stepped Care model of pain management at VA Connecticut Healthcare System
- **DoD and NIH:** PASTOR/PROMIS
- **DoD, VA and the Philadelphia Research and Education Foundation:** (RAMBPOS) Patient access and telephonic interviewing infrastructure for prospective data collection

Moving Forward

- How can we optimize the shared areas of interest?
- How can the agencies improve communication and collaboration?
- Can the existing surveys be expanded to include more data elements relevant to pain and more pain conditions?
- Can we share relevant registries and data repositories?
- How can we engage professional societies, industry, private foundations, advocacy groups?