A multi-method assessment of pilot grants & research collaboration at UIC's Center for Clinical & Translational Science

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RESEARCH QUESTIONS

As part of the multi-year evaluation of the Center for Clinical and Translational Science (CCS) at the University of Illinois at Chicago (UIC), this research investigates the potential impact of the initial round of CCS pilot grant funding by comparing the grant proposals and collaborative networks of 2006 pilot grant recipients to a comparison group of pilot grant applicants who did not receive an award. We also use qualitative data to describe the intermediate outcome experiences of two recent recipients. Our questions include the following:

1. To what extent does pilot grant funding impact downstream funding opportunities?
2. To what extent does pilot grant funding impact future research collaborations?
3. What other short-term impacts do pilot grants have on recipient research?

DATA AND METHODS

Quantitative data for this analysis come from a list of pilot grant applicants and recipients provided by the pilot grant program as well as funded grant proposals from 2005 and 2006. The Office of Research Services at UIC provided four years of data on these proposals. Pilot grant recipients were defined as principal investigators receiving funding from the initial round of pilot funding in 2006. Seventy 76 pilot grant submissions were awarded funds ranging from $40,685 to $100,000. The control group was composed of the PI’s of the 69 project teams that did not receive an award. Although these awards were made prior to UIC’s CTSA award, the purpose of the funding is generally consistent with the current objectives of the pilot program. Qualitative data come from semi-structured interviews with the director of the Novel Translational and Collaborative Studies Core (NTCS), who sponsors the grants, and with two pilot grant recipients funded in 2006 and 2010.

IMPACT OF PILOT GRANT PROGRAM

The purpose of the grant program is to provide funding and core services to support pilot clinical and translational research at UIC. In particular, pilot grants are intended to:
1) Generate preliminary data for submission of grant applications
2) Research that improves clinical diagnosis, biostatistics, clinical research ethics, informatics, or regulatory pathways
3) Research that develops new methodologies

Clinical and translational pilot studies were first funded in 2006, prior to CCTS funding. They were funded again in 2008, 2009 (the year the UIC CCTS was funded), and 2010. Each year the KFPs, application review process, and recipient support processes were revised to improve the outcomes of the pilot studies. Initially, a request for applications was announced that described the target area of research for that round of funding. Proposals were required to be community-based or focused on pediatrics in addition to meeting the basic purposes of the pilot grant program. Approximately 80 applications were received each round, making reviews for all proposals about 3 to 7 weeks during which time very demanding. Beginning in 2009, letters of intent were requested, and noteworthy projects meeting the grant criteria were sent invitations to apply. Each round of applications is reviewed and the process improved for the next request for submission.

POSSIBLE IMPACTS OF PILOT GRANT ON RECIPIENTS

Case studies of two pilot grant recipients describe intermediate outcomes and indicate progress prior to documentation of publications and subsequent funding.

POTENTIAL IMPACT OF PILOT GRANTS ON POST-POLIT-FUNDING OPPORTUNITIES

Table 1 shows results of an ANOVA comparing the proposals for outside funding of the 2006 pilot grant awards to the nonawardee control group. This analysis shows that subsequent to the pilot grant award and compared to the control group:

- Pilot grant PI’s were more likely to seek access rate on subsequent proposals for outside funding than the control group. However, the total dollar amount received on these awards was not significantly different between the groups.
- Pilot grant PI’s were awarded proposals significantly more frequently from industry sources than the control group and received more awards and funding from industry sources than the control group.
- Pilot grant PI’s submit proposals to foundations less frequently than the control group and receive less funding from foundations.

OUTER OTHER POSSIBLE IMPACTS OF PILOT GRANT ON RECIPIENTS

Case studies of two pilot grant recipients describe intermediate outcomes and indicate progress prior to documentation of publications and subsequent funding.

Case study 1: A Clinical Trial of Early Physical Therapy to Promote Longevity in Infants with White Matter Injury (2006 recipient)

Why a pilot grant? The investigator wanted to try out a new physical therapy treatment and needed some early evidence of feasibility. Because this treatment was for a rare disease, which can be very costly to study, she needed additional data to support a request for funding for a larger clinical trial. Following are the key impacts of pilot grant funding:

- Additional CCTS Core Supported: None was needed.

Collaborations Developed: This created a very multidisciplinary approach.
- New site: A new hospital was added to increase opportunities to find cases for rare diseases. An MRI center was added to include brain scans in the outcome analysis.
- New disciplines: An anesthesiologist and a physician who was head of the Neonatal Intensive Care Unit at the new site.

Outcomes:
- Several areas for improvement in the intervention were found. They will need to be addressed prior to proposing a larger trial.
- The intervention appears to have found improvement in the treatment group.

Publications and Presentations:
- A grant proposal was submitted at an international conference. Many people were interested in this intervention and the uniqueness of the research.
- Several publications are in process.

Subsequent Funding: This is challenging, because it will cost millions of dollars and many, many sites to get enough cases.

Case study 2: Human Alzheimer’s Disease Pathology in a New Transgenic Mouse Model (2010 recipient)

Why a pilot grant? The researcher had a large amount of data available from a prior grant and needed to find a collaborator. He needed a grad student, a biostatistician, and mouse tissue samples. Impacts of the pilot grant funding:

- Additional CCTS Core Supported: Regulatory Support and Biostatistics Core.

Collaborations Developed:
- Transgenic mouse researcher: Led to Alzheimer’s disease research model that has never been done before with transgenic mice.
- CCTS biostatisticians: The Design and Analysis Core director was fascinated with the study design and lack of appropriate analysis. He researched approaches outside of the field of medicine and adapted another method for this study. He taught this method to one of the core biostatisticians who now runs the analyses.

Outcomes:
- A new, unique research model to study Alzheimer’s disease based on transgenic tissue mice and human tissue.
- A new biostatistical analysis which the investigator believes will set a new standard for this type of research.

Planned Publications:
- Two articles are at the point of being submitted. Several others are planned. Both statistics will be prominent coauthors on her publications.
- Subsequent Funding: None yet.

Table 1. ANOVA analysis of CCTS Pilot Grant Recipients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of proposals submitted</td>
<td>43%</td>
<td>17%</td>
<td>0.04</td>
</tr>
<tr>
<td>% of proposals awarded</td>
<td>71%</td>
<td>15%</td>
<td>0.001</td>
</tr>
<tr>
<td>Amount awarded per proposal</td>
<td>$31,250</td>
<td>$31,250</td>
<td>0.001</td>
</tr>
<tr>
<td>Average amount awarded</td>
<td>$31,250</td>
<td>$31,250</td>
<td>0.001</td>
</tr>
</tbody>
</table>

LIMITATIONS

- Only 7% are in the pilot grant recipient group. Recipients are hardly skewed by rank and high-level positions.
- Counts of proposals are not weighted by sample size.
- Due to data limitations, we were unable to link or associate subsequent funding proposals with research conducted as part of the pilot grant.

KEY FINDINGS FOR FUTURE EVALUATION

- Subsequent to the pilot grant, PI’s seek and acquire more industry funding and less foundation funding; this may be an indication that pilot grants are motivating new technology. Further evaluation is required to better understand the factors behind this potential difference.
- Case study suggests that new multidisciplinary collaborations form because of pilot grants. Quantitative data suggest that pilot grant collaborations form for the pilot grant and then disband as pilot grant PI’s submit fewer subsequent funding proposals with the pilot grant PI as a collaborator. Further assessment is required to explore the formation and dissolution of collaborative ties.
- A mixed approach of case study and network analysis can be a useful tool for assessing pilot grant programs.