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The impact of a Concept Award grant program on the University of British Columbia Department of Surgery

Academic activity and external funding success were outcomes of a departmental seed grant program that allowed recipients to pursue innovative research.

ABSTRACT

Background: **The Department of Surgery at the University of British Columbia distributed Concept Award funds over a 5-year period (2003 to 2008) to support faculty pursuing innovative research. In January 2012, a study was undertaken to evaluate the impact of the Concept Award seed grant program on research in the department.**

Methods: **A questionnaire was used to ask award recipients about the outcomes of their funded research: projects completed, publications and presentations generated, and further funding received. Data were gathered about peer-reviewed grants and industry funds obtained by Concept Award projects, and about the number of department trainees involved in the funded research.**

Results: **Of 28 Concept Award recipients who received funds, 17 (61%) responded to the survey. The majority of respondents (71%) would apply again for a Concept Award, and an even larger number (94%) recommended that the program be reintroduced. Respondents received a total of $142 000 in Concept Award funding. Subsequently, they received $2 201 765 in external funding ($2 133 015 in peer-reviewed grants and $68 750 in industry funds). This net financial gain of $2 059 765 represents a 1550% return on the initial seed grant investment. Concept Award projects involved 21 trainees in the department and generated 46 publications and 45 presentations.**

Conclusions: **The Concept Award program had a positive impact on research conducted by recipients. Trainees were involved in the projects and external funds were obtained for follow-up research. Limitations of the study include its retrospective nature and survey response rate of 61%. Further prospective study of the impact of seed grant programs could lead to improved academic productivity and increased research funding for investigators and their departments.**

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Background

Acquiring funding to support academic research has become increasingly difficult. Grant proposals that contain preliminary research findings can provide proof of the principle that underlies the proposal and strengthen applications for funds. Competitive peer-reviewed institution-based seed grant awards can fund a variety of academic and creative activities in order to generate preliminary results.[1] In residency training programs, seed grants have been shown to promote resident academic productivity, as evidenced by an increase in the number of scholarly publications.[2]

In the Department of Surgery at the University of British Columbia, Concept Awards were distributed to departmental members over a 5-year period (2003 to 2008) through an internal competition. Funds for the Concept Awards were provided by the department. The Concept Award seed grant program was intended to encourage faculty, both junior and senior, to pursue innovative research. Four to five Concept Awards were granted each year. By providing seed funding for new ideas, the Concept Awards attempted to overcome a financial barrier to surgical research.

In January 2012, a study was undertaken to evaluate the impact of the Concept Awards on the recipients' individual research and on departmental research productivity.

We hypothesized that the majority of Concept Award recipients who completed their research projects would have produced publications and presentations, and may have succeeded in acquiring grants or other funds for following up on research initially supported by a Concept Award.

Methods

After we acquired approval from the University of British Columbia Research Ethics Board to carry out this project, we identified Concept Award recipients from a database at the Centre for Surgical Research at UBC. A questionnaire was developed and sent by mail. Award recipients were asked about the outcomes of their projects, whether a funded project was completed, whether they received further peer-reviewed grants or industry funds (amount in Canadian dollars), whether a new project stemming from the project initially funded by a Concept Award was pursued, and whether a Concept Award led to a publication or presentation. Award recipients were asked additional open-ended questions regarding the overall impact of receiving a Concept Award, and why they would recommend the program or apply again for funds. The impact of the Concept Award program on the research environment in the Department of Surgery was also evaluated by determining the number of trainees involved in funded projects.

Survey responses were analyzed and funding and training numbers were tabulated. Actual numbers, means, and percentages were used to present the data. We calculated the net return on investment in dollar and percentage terms.

Results

Of the 28 award recipients identified, 17 (61%) completed the survey questionnaire. Twelve of 17 recipients (71%) said they would apply for these grants again, and 16 recipients (94%) recommended that the Concept Award seed grant program be reintroduced.

Table 1. Responses to "What was the overall impact of the Concept Award on your research?"

Helped me to complete a good study and increase my chances of success with future grant applications.
Enabled pilot/feasibility data to justify competitive external grant application.
The data generated from Concept Award was used to apply for CIHR grant, which was successful.
Allowed important seed money to establish new methods and provide pilot data for new grant applications.
This award had tremendous impact on my research career.
With the Concept Award, we were able to complete our small project and develop a novel, clinically useful technique. The research project supported by the award helped yield 2 publications in the abstract form and several presentations in national and international conferences.
Allowed lab research to pursue different focus. Although not directly successful, led to other grant applications.
The money was never paid out because of delay in getting ethics, etc.; therefore the study was never done.
Receiving a Concept Award was a personal confidence builder; however, without collaborative support to provide the space and infrastructure, $10 000 is insufficient for basic science work.
Enables preliminary data acquisition that is key.
Although the research triggered by the Concept Award has not yet led to significant publication, it has launched 2 important initiatives.
Helpful but inadequate. Needed additional $20 000 from industry to complete. Still helpful, however as it made it much easier to get industry sponsorship.
The Concept Award provided me with some critical early support that allowed me to get early data to launch my research program.
The Concept Award had a very positive impact on research and allowed for development of a novel idea/line of research that otherwise wouldn't have been carried out.

CIHR = Canadian Institutes of Health Research

Table 2. Responses to "Why would you recommend this program?"

Great way to kick-start an idea!
To create preliminary data for subsequent proposal.
Small amount of seed money may help us to get preliminary data.
Important source of funds for minor investigators.
A program of this type would provide start-up funding to test hypotheses and develop new techniques that could be applied in our clinical practice.
Nothing else available for risky ventures.
Hard to get research money, so any help is important.
It is good to have local support.
Allowed us to rapidly develop and implement our project that would otherwise have been impossible to do.
Provides important early support for new faculty to encourage their early academic development.
Provides funds to allow development of a novel line of research.

Concept Award recipients provided generally favorable responses to some open-ended questions, including "What was the overall impact of the Concept Award on your research?" (**Table 1**),"Why would you recommend this program?" (**Table 2**), and "Why would you apply again for this program?" (**Table 3**). Respondents also provided other comments about the program's benefits (**Table 4**).

The respondents' seed funding ranged from $5000 to $10 000: five recipients received $5000, four recipients received $8000, and 10 recipients received $10 000. Two recipients received the award twice, meaning that 19 rather than 17 Concept Award projects were evaluated. Thirteen award recipients (76%) completed the research they received funding for, and 10 (59%) went on to carry out more research stemming from the original work supported by the Concept Award.

In total, respondents received $142 000 in Concept Award funding. Eight respondents (47%) received external funding based on their early observations. **Table 5** shows that respondents received $2 201 765 in external funding ($2 133 015 in peer-reviewed grants and $68 750 in industry funds) for Concept Award projects. This represents a 1551% return on the initial departmental investment for a net gain of $2 059 765. The **Figure** shows that 46 publications (mean of 2.71 per recipient) and 45 presentations (mean of 2.65 per recipient) were generated by these Concept Award projects.

Concept Award funds paid for research supplies, research staff, and statistician support. The projects supported by these funds involved 21 trainees, including 5 doctoral students, 5 master's students, 5 residents, 5 medical students, and 1 other trainee.

Table 3. Responses to "Why would you apply again for this program?"

We have many new ideas of theoretical and practical importance. We need seed funding to start with before applying for major grants.
Not enough funds for large animal study (pilot). Therefore, I could not obtain sufficient preliminary data to support my new grant application (unsuccessful due to insufficient preliminary data).
I think the Concept Award is a great idea but it should be granted to individuals who have appropriate mentorship and support; otherwise it is unlikely to be successful.
Provides funds for lines of research that are novel and may otherwise go unstudied.
Supports novel research ideas that need funds for data/results to be developed.

Table 4. Responses to requests for "Other comments about the program."

Critical to have a small pot of money to test out new ideas/methods.
We hope that the same or a similar program could be initiated.
This was an excellent program that promoted motivation and idea development in the department. Though a small amount of money was provided, it provided enough funds to get early study results/data that could serve as the basis for further grant applications.
The Concept Award allowed me to obtain matching industrial support to help develop this novel project.

Conclusions

A very limited amount of research has focused on seed grant programs and their impact. In a special report on the California stem-cell initiative published in *Nature*, Erika Check[3] showed how seed grants successfully drew accomplished and experienced researchers in the field of human embryonic stem cell research to the state. Certainly at UBC, even with the smaller funds available, the Concept Award program stimulated the development of novel research projects. The program also generated a competitive research environment that stimulated participating faculty and

Table 5. External funding received for Concept Award projects.

	Projects	
	Industry grants	Peer-reviewed grants
1	0	0
2	0	$50 0000
3	0	$98 800
4	0	$770 000
5	0	$98 800
6	0	$325 000
7	0	0
8	0	0
9	0	0
10	0	$200 000
11	0	$100 000
12	0	0
13	0	0
14	0	0
15	$60 000	$5 000
16	0	0
17	0	0
18	0	0
19	$8 750	$90 000

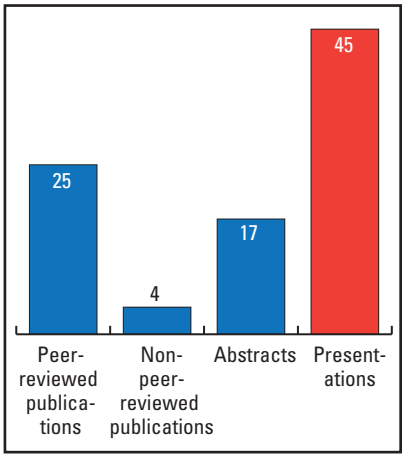

Figure. Publications and presentations based on research supported by a Concept Award.

thus, we believe, benefited the entire department. Indeed, our observations support this belief.

In a report published in *Health Policy* in 2008, Hanson and colleagues[4] evaluated seed grants awarded to investigators in the field of cancer research in New Jersey. The 59 research scientists, including 33 new investigators, received approximately $5 million over 5 years and were able to raise more than $50 million in research funds relevant to their commission-funded projects for a 900% return on investment. The study participants suggested they were able to develop their ideas, network, and raise money largely due to the seed grant program. They concluded that these seed grants for pilot projects inexpensively and efficiently built cancer research capacity in the state.

Another study from the University of Minnesota found that outside funding was obtained by 27% of the recipients of a one-time seed grant awarded to initiate a new direction in research.[5] The net return on this seed granting investment was 560%.

Although the funding program in our department at UBC was on a much smaller scale, the return on investment was also significant. More than half of the Concept Award recipients (53%) received external funding for their follow-up projects, contributing to a remarkable 1551% return on the initial investment in Concept Award funds.

The outcomes from our study are supported by a recent report comparing medical-education-research projects that received small grants to those that did not receive funding. This study found increased scholarly productivity and interinstitutional collaboration in the funded group.[6] In addition to helping researchers compete more effectively for external funding, the Concept Award program at UBC also helped promote academic accomplishment in our department. Although one of the biggest benefits of the Concept Award program was the boost it provided to novel lines of research that otherwise would be ignored due to a lack of financial support, individual researchers were not the only beneficiaries. The involvement of trainees, including medical students, residents, master's students, and doctoral students, definitely broadened the impact of the program.

Limitations of the study

Limitations of this study include its retrospective nature and survey response rate of 61%. The nonresponders could have had a different view of the program. For example, the 39% of recipients who did not respond to the survey may not have derived as much benefit as respondents in research productivity and further funding, and consequently may not have viewed the program as positively.

This study quantified the funds obtained to continue research on projects that were initially supported by the Concept Awards, and specifically did not evaluate previous years' individual or departmental research funding. Thus, we are unable to comment specifically on the precise financial impact of Concept Awards on research funding for the UBC Department of Surgery overall.

Further research recommended

The Concept Award seed granting program had a positive impact on research productivity and external funding success in the Department of Surgery, and was viewed as beneficial by award recipients surveyed. We believe such programs could benefit other departments. Further prospective clinical study of the impact of seed grant programs on surgical and other medical subspecialty programs could lead to improved academic productivity and increased research funding for individual investigators and their departments.

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