CIHR INTERNATIONAL PEER REVIEW EXPERT PANEL
UNIVERSITY DELEGATE NETWORK

REPRESENTATIVE: JENNIFER J. McGRATH, UDEC, Concordia Univ. **JANUARY 17, 2017**

Allocated 5 minutes to present during first morning session, of Panel's second day of meetings. Presented summary of ongoing UD Network discussions and compiled information from online survey that sought specific input to original questions posed by Panel. Four other representatives from CIHR research community also presented during this session (Drs. Jim Woodgett, Holly Witteman, Kristen Connor, Michael Hendricks). Two objectives of presentation: (i) highlight early milestones in evolution of reforms, and (ii) identify seven points repeatedly raised by science community. Following presentations, representatives answered follow-up questions raised by Expert Panel.

ORIGINAL QUESTIONS POSED BY PANEL

1. Does design of CIHR's reforms of investigator-initiated programs & peer review processes address their original objectives?
2. Do changes in program architecture and peer review allow CIHR to address challenges posed by breadth of its mandate, evolving nature of science, and growth of interdisciplinary science?
3. What challenges in adjudication of applications for funding have been identified for public funding agencies internationally and in literature on peer review and how do CIHR's reforms address these?
4. Are mechanisms set up by CIHR, including but not limited to College of Reviewers appropriate and sufficient to ensure peer review quality and impacts?
5. What are international best practices in peer review that should be considered by CIHR to enhance quality and efficiency of its systems?
6. What are leading indicators and methods through which CIHR could evaluate quality and efficiency of its peer review systems going forward?

FIVE MINUTE OBJECTIVES

1) Early Milestones of Reforms

2) Seven Concerns Raised Repeatedly

Dr. McGrath is currently one of the longest standing UD Network members (since April 2009), making her well-positioned to identify critical points in development of reforms.

INTERNATIONAL PANEL

–Chair. Sir Peter Gluckman, Chief Scientific Advisor to Prime Minister, New Zealand

–Dr. Trish Groves, Director Academic Outreach & Advocacy, British Medical Journal

–Professor Mats Ulfendahl, former Secretary-General for Medicine & Health at Swedish Research Council

–Professor Mark Ferguson, Director General, Science Foundation Ireland & Chief Scientific Adviser to the Government of Ireland

–Professor Jonathan Grant, Director of the Policy Institute, Assistant Principal for Strategy, King's College London, UK

–Dr. Michael Lauer, Deputy Director, Office of Extramural Research, National Institutes of Health, USA

–Professor Dame Anne Glover, Vice-Principal External Affairs & Dean for Europe, University of Aberdeen

EARLY MILESTONES IN EVOLUTION OF REFORMS

[History repeats itself]

2009 ***HEALTH RESEARCH ROADMAP***

Strategic Direction 1: "Our peer review system has been internationally recognized for its design and effectiveness….we will make improvements to the system where they are needed, while also building on its strengths." (p 15)

"CIHR will continue to ensure that the peer review system is able to meet the knowledge requirements of health researchers across all four pillars…we will strengthen our processes and criteria for identifying excellence and innovation so that proposals from each pillar of health research are evaluated with the same degree of rigour and fairness." (p 15)

–Alain Beaudet
CIHR's Strategic Plan 2009-10 – 2013-4

June 2009 ***UNIVERSITY DELEGATE FACE-TO-FACE MEETING***

"CIHR will ensure transparency and accountability"

Preliminary Results Web Survey Results; Web based survey launched April 2009 (n=330; 71% academic sector): "94-77% support [or strongly support] Strategic Direction 1 – World Class Excellence"

"Explore creating a more flexible committee structure through a pool of expert reviewers 'on standby' who are called to review depending on the scope of applications received → Help to reduce reviewer fatigue and the last-minute scramble for reviewers"

"For the OGP, consider pooling related committees and splitting only after the applications have been received (cf. NSERC 'conference' model) → Allow for a proactive, rather than a reactive, response to changes in application

–Alain Beaudet
CIHR's University Delegate Meeting
June 4, 2009
Slides #19-25

–Greg Huyer, Peer Review Management Unit
Update on Peer Review Management Activities
June 4, 2009
Slides #12, 13

scope and pressure"

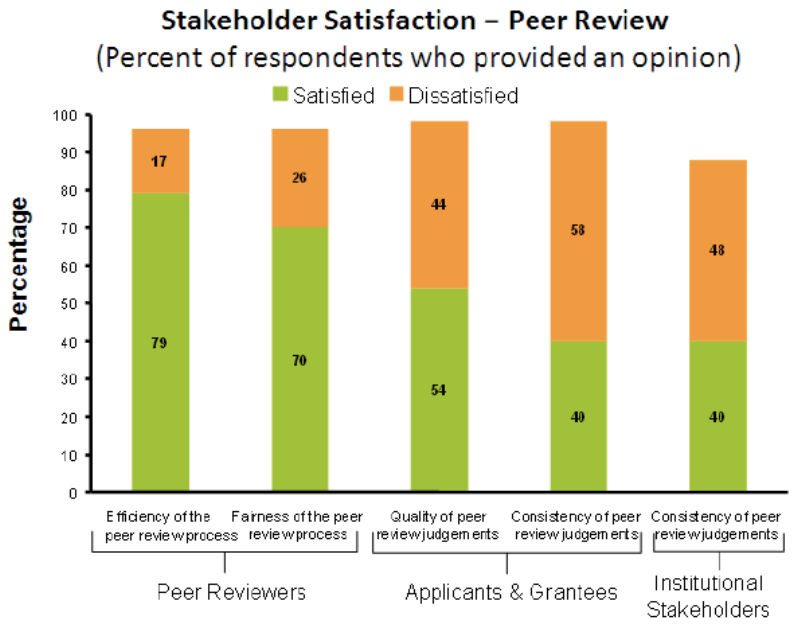
"Ensure that external reviewers are used only when truly necessary."

"Structure programs and committees to reduce the need for external reviewers, by ensuring as much as possible that the necessary expertise can be present in the room."

Ensure necessary expertise present in the room

2010 ● ***SURVEY OF STAKEHOLDER SATISFACTION IN PEER REVIEW***

–Ipsos Reid (2010) survey conducted for CIHR's 2011 International Review



[Funding Success Rate in 2010: 23%]

2011 ● ***DESIGN DISCUSSION DOCUMENT***

–Draft Version, Design Discussion Document Version 1.0 – December 16, 2011

"Availability of expertise is a critical component in CIHR's peer review process…growing need for CIHR to recruit peer reviewers from a broader bases of expertise to ensure all aspects and future impacts of health research are considered…it is becoming increasingly difficult to populate panels with enough breadth of expertise to fully meet the requirements of emerging and multidisciplinary areas of research." (p 17)

"There is disagreement on what should be funded 25% of the time, consistent with other studies of peer review…The reliability and consistency of peer review decisions are critical components of CIHR's selection process." (p 18)

"As Mayo and colleagues point out: 'Despite science's pre-occupation with accurate measurement, there is no precise method measuring the quality of proposals…' " (p 19)

[Referring to Ipsos Survey Figure above:] "while CIHR's peer reviewers find the process to be fair and effective, there is room for improvement" (p 19)

"79% of peer reviewers are satisfied with the efficiency of the peer review process, while 70% of peer reviewers are satisfied with the overall fairness of the process." (p 19)

June 2011 ● ***UNIVERSITY DELEGATE FACE-TO-FACE MEETING***

– CIHR's University Delegate Meeting "June 27, 2011" [Correct date: June 2] *Slides #5 & 6*

"Since release of Designing for the Future document, a number of presentations have been made…60 Townhalls…institution administrators…professional societies…national roundtables…advisory groups…Some common themes have emerged…" (p 5)

[Bolded emphasis retained from original.]

"1. Why is CIHR ***changing*** the programs and the peer review system ***at the same time***? This is a lot of change at once and is risky."

"2. Research is done in the four pillars in very different ways. Why are you using the ***same adjudication criteria for all pillars***?"

"4. How will you ensure that ***one pillar is not negatively impacted*** by the change?"

"6. My grant is ending during the transition period and I will have a ***gap in funding***. What are my options?"

"8. Will there be ***enough reviewers*** to adjudicate applications to the

new schemes?"

"9. How will you ensure ***quality of review*** without face to face meetings?"

"10. How will you ***integrate results*** from all reviews and how will the face to face meetings work?"

"11. CCV was a disaster. How will CIHR ***ensure that the technology is in place*** to support the change?" (p 6)

"Peer review process is an essential part of maintaining excellence in all fields of scientific endeavor. The excellence of the research supported by CIHR is entirely dependent on the excellence of the peer review process." (p 19)

"Peer recruitment is time-consuming/inefficient…lack of incentives for peer reviewers…no systematic approach for ongoing evaluation and incorporating improvement to reviewers, committees, peer review process." (p 19)

– *CIHR's University Delegate Meeting*
June 2, 2011
Slide #19

- ***Will there be enough reviewers?***

– *CIHR's University Delegate Meeting*
"June 27, 2011" [Correct date: June 2]
Slide #14

[Early simulation results suggested 7-8 reviewers to minimize measurement error; Projection based on 5 reviewers for Open Reforms.]

	Published Design								Existing Process
	Foundation Scheme				Project Scheme			Both Schemes	OOGP
	Stage 1	Stage 2	Stage 3	Annual Total	Stage 1	Stage 2	Annual Total x2	Annual Total	Annual Total
# Reviewers / App	5	5	5		5	5			2
# Readers / App									1
# Apps / Reviewer	~15-20	~15-20	~17		~15-20	~10			~10
App length	3 pgs & CVs	10 pgs & CVs	Summary & 5 reviews		5-6 pgs & CVs	Summary & 5 reviews			11-13 pgs & CVs
Review hrs / App	~1	~3-4	~2		~4	~2			6
Review hrs / All Assigned Apps	20	80	34		80	20			60
Meeting & travel time/Reviewer			16	16		16	32	48	16
# Apps Received	**750**	**350**	**50**	**750**	**2000****	**250**	**4,000**	**4,750**	**4,578**
Approx. # Reviewers*	**187**	**87**	**14**	**288**	**500**	**125**	**1,250**	**1,538**	**1,969**
Total hrs/Reviewer	**20**	**80**	**50**		**80**	**36**			**76**
Total review hrs (All Reviewers)	**3,750**	**7,000**	**724**	**11,474**	**40,000**	**4,500**	**89,000**	**100,474**	**126,093**
Cost ($1000)			**$17**	**$17**		**$150**	**$300**	**$317**	**$1,913**

* These numbers are rounded. Related totals may not agree due to rounding. ** Assumes less applications received given longer application requirements.

Projection assumptions

"**Assumes less applications received given longer application requirements"

- ***Corporate Overview***

"Any program design/change and implementation must take into consideration impacts on:
peer review burden
applicant burden
program complexity
cost-effectiveness and efficiency
stability (regular and predictable competition…)"

–*Alain Beaudet*
Corporate Overview/Recent Events
June 2, 2011
Slide #14

Jan 2012

- ***UNIVERSITY DELEGATE FACE-TO-FACE MEETING***

"University Delegate Network has concerns about the open reforms." Drs. Johnston & Reithmeier proceeded to outline concerns in "mock peer review" format, concluding that there were "significant flaws" and scoring "not in fundable range" for proposed open reforms.

–*Gerry Johnston (Dalhousie) & Reinhart Reithmeier (Toronto)*
UD Opening Remarks
January 12, 2012

Discussion Themes [Structured breakout exercises; Sample: Theme #1]

"In your groups, discuss the key design elements for the Program and Project Schemes and answer the following questions:"

"1. What are the strengths of the design?"

"2. What are…key considerations for CIHR in finalizing architecture"

– *CIHR's University Delegate Meeting*
January 12, 2012
Slide #12

Managed feedback input

May 2012

- ***DISCUSSION WITH INSTITUTION ADMINISTRATORS***

"CIHR intends to re-design the Open Suite of Programs to better:

1. Capture excellence across all research domains,
2. Capture innovative/breakthrough research,
3. Contribute to improved sustainability of the long-term research

–*Jane Aubin*
New Open Suite of Programs and Peer Review Enhancements: Discussion with Institution Administrators
May 8, 2012
Slides #3, 11

enterprise, and
4. Integrate new talent" (p 3)

"Current thinking suggests a gradual phase-in strategy will be used to implement the new design in small, progressive steps." (p 11)

"CIHR is considering piloting some elements of the new Open Suite of Programs design." (p 11)

"Current considerations for transition include…developing a thorough understanding of system-wide impacts of changes to CIHR's programming…development of a monitoring and evaluation system to ensure continuous quality improvement of the new system." (p 11)

● ***DESIGN DISCUSSION DOCUMENT FORUM***

"Canada punches above its weight" (quote)

"Grant values [for Project and Foundation Schemes] in the Design Discussion Document are averages based on the level of funding that researchers currently review…Modeling predicts distribution…" (p 16)

"The mid-career stage is clearly an area of concern for the research community and CIHR, and we are committed to monitoring their success and that of those at other career stages." (p 18)

–Jane Aubin
CIHR Design Discussion Document Forum
May 8, 2012
Slides #16, 18

Aug 2012

● ***WHAT CIHR HEARD***

"***Several*** respondents questioned whether the proposed changes would, in fact, foster innovative grants." (p 18)

"***Most*** believed that the greater number of review stages, combined with more reviewers per application, would increase the overall workload and time commitment for peer reviewers." (p 28)

"***Several*** respondents questioned how CIHR intends to match applications to reviewers." (p 32)

"***All*** respondents agreed that the use of electronic matching is not sufficient, …current manual matching of reviewers to applications is preferred." (p 32)

"***Several*** respondents remarked on the potential for increased reviewer workload as a result of the implementation of application-focused review."(p33)

"***Several*** respondents commented that the problems with CIHR's current panels are not so severe as to warrant a complete elimination of peer review committee structure. Discontinuing the traditional standing committee structure was seen as a threat to the reliability and accountability of the peer review process." (p 33)

"***Several*** suggested CIHR re-focus current set of peer review committees, [consolidating] smaller panels into larger panels with broader mandates." (p 33)

"***Several*** respondents remarked on the subjective nature of peer review…***Several*** respondents agreed that structured review criteria should be flexible enough to accommodate different disciplinary expectations, and be applied according to the accepted standards of excellence for those disciplines." (p 36)

"***Several*** commented that feedback provided via structured review could inform constructive changes to grant applications." (p 37)

"***Most*** respondents emphasized that Stage 2 applications should be reviewed by a face-to-face committee of expert reviewers to ensure a well-considered, calibrated decision is made on the overall merit of the applications." (p 41)

"***Several*** respondents remarked that their peers would not review an application to the best of their abilities if not held accountable in a face-to-face meeting." (p 41)

"***Most*** respondents agreed that incentives should include some form of compensation to reviewers, such as increased duration or value of CIHR research grants…application deadline extensions…honoraria (particularly for international reviewers)." (p 44)

"***Most*** of the respondents…indicated that further evidence is needed to

– CIHR Reforms Task Force

What CIHR Heard: Analysis of Feedback on the Design Discussion Document (57 pgs)
August 2, 2012

[Bolded emphasis retained from original.]

questioned how intends to match

electronic matching not sufficient

increased reviewer workload

different disciplinary expectations

inform constructive changes

well-considered, calibrated decision

[Bolded emphasis retained from original.]

held accountable in face-to-face

reviewer incentives

ensure the changes will have the intended outcome when implemented." (p 47) ***further evidence is needed***

"***Many*** respondents suggested that the changes should be implemented gradually after careful consideration of the results of pilot studies for the proposed changes." (p 47) ***should be implemented gradually***

"***Most*** respondents…emphasized that any changes should be phased-in, allowing for impact analysis at each stage to ensure that the changes have the intended outcome." (p 47) ***changes should be phased-in***

"***Most*** agreed that CIHR must develop a systematic evaluation plan for each aspect of the reforms as well as the effect on the health research enterprise as a whole." (p 48) ***systematic evaluation plan***

June 2013

UNIVERSITY DELEGATE FACE-TO-FACE MEETING – *CIHR's University Delegate Meeting June 27, 2013*

Foundation Scheme Interpretation Guidelines – *Working Towards Foundation Scheme Interpretation Guidelines June 24, 2013*

"Foundation Scheme includes a separate stream for new/early career investigators…" (p 4)

"[Foundation] grant values will be within the range of approximately $50,000 to $1.5 million per year." (p 4)

Project Scheme Interpretation Guidelines – *Working Towards Foundation Scheme Interpretation Guidelines June 24, 2013*

"…research approaches include: experimental (ex post facto, quasi-experimental), correlation (relational and prediction studies), historical, comparative (includes natural experiments), descriptive, evaluation (descriptive research including systems analysis, responsiveness), action (small scale intervention in real world context, problem-based, participatory, community-based), synthesis, ethnography, feminist and cultural" (p 9) [Early taxonomy?]

. . . ***Concerns consistently, repeatedly raised through Live Pilots*** [Saturation?]

SEVEN POINTS REPEATEDLY RAISED BY SCIENCE COMMUNITY

CIHR staff have worked on the frontlines, tirelessly shifting gears and making course corrections, while facing unpredictable employment security due to implementation of those very same reforms. The Scientific Community is <u>indebted</u> to their dedication.

CIHR has witnessed a shift from "internationally recognized" to "frustration", "anger", "lack of credibility", "no confidence", "learned helplessness", and "exasperation". Many changes to the peer review process have been unsuccessful in addressing the original goals to address reviewer fatigue/burden and applicant burden; many contend the reforms have worsened these circumstances. Seven points have been repeatedly raised by the science community and within the University Delegate Network.

1) NEW PROBLEMS CREATED

MITIGATE NEW PROBLEMS

Rollout and implementation of the Reforms has created and showcased new problems for peer review. Original goals centered around fatigue and burden; new concerns are now raised about reviewer expertise/qualifications and quality of reviews. IT shortcomings have been magnified. Timelines have been tightened (eg 2 weeks to review). There has been a failure to capitalize on data science advances to make use of available information and technology (eg provide Chairs detailed information about Reviewers, not 10 keywords).

2) HASTY IMPLEMENTATION

AMPLE PILOT DATA

Inadequate pilot testing has been followed by rapid implementation or impulsive changes, without further evaluation of changes. Changes across entire peer review architecture were implemented simultaneously, despite repeated concerns. Pilot tests conducted with inadequate/inappropriate samples (eg internal testing; different competitions), with no evaluation of generalizability. Methodology for pilot testing would not pass peer-review.

3) UNDERMINE GIVEN RATIONALE

CLEAR RATIONALE FOR CHANGES

Perhaps a byproduct of hasty decision-making or impulsive responding to concerns raised, CIHR elected to change decisions that undermined the very rationale given to implement the change in the first place. As illustration: (i) Following extensive modeling and simulations, term limits and funding caps were originally included in the Foundation and Project Schemes. These were quickly abandoned as the scientific community endured low success rates. (ii) Similarly, original CIHR modeling (based on the Fellowships competition) indicated 5 reviewers were optimal; discussion has ranged from 7-8 to 3.

(Peer Review Working group recommended 4 reviewers to balance constraint of identifying appropriate reviewer expertise with minimizing measurement error.) (iii) Finally, "important meetings" (UD Network Annual Meeting; Reform Townhalls; Chairs & SOs Meeting; International Peer Review Panel) are typically held face-to-face. The value of in-person meetings has been repeatedly acknowledged and emphasized.

[Ironically announced suspension of face-to-face review committees at in-person Townhall meeting.]

4) CONSTRAINED FEEDBACK

ENCOURAGE DISCOURSE

Science is built on principles and values of discourse, discussion, and debate. Prescriptive coordination of forums, townhall meetings, and breakout sessions managed input from the scientific community (eg what are strengths of X?). Feedback was constrained to focusing on the planned changes underway; questioning and dissent were discouraged or suppressed (eg ran out of time). Selected information was presented (ie cherry-picked findings) to reinforce decisions, while limiting or masking divergent information. Certain CIHR staff acknowledged and admitted failure to be forthright with complete information.

5) LACK OF TRANSPARENCY

EMBRACE OPEN SCIENCE TO OBJECTIVELY EVALUATE REFORMS

Repeated requests for greater transparency throughout peer review process, as well as rationale for multiple reform changes. Substantially more information used to be disseminated prior to reforms (eg funding rate, score, cut-off for each standing OOGP committee). Contradictory to common message from CIHR Reforms to include systematic approach for ongoing evaluation; risk and mitigation plans associated with implementation of reforms. Some withheld information is under the guise of "confidentiality limits", which directly contradicts to the movement of open science. Evidence of communication challenges within CIHR (eg Chairs concern of reviewer expertise in current competition).

6) ADVANCING INTERDISCIPLINARY RESEARCH

FOSTER "BEST" SCIENCE (ACROSS & WITHIN DISCIPLINES)

Despite recognizing the evolving scientific landscape toward multi- and inter-disciplinary research, there is little evidence that the Reforms support increased interdisciplinary research. Application-centric matching was featured as the mechanism by which to advance interdisciplinary research; no strategy to evaluate if matching algorithm is adequate nor if Reforms are effective. Challenge to measure target outcome (interdisciplinary research).

7) PSYCHOMETRIC CHALLENGES

SOLICIT & RETAIN MEASUREMENT EXPERTISE TO INFORM DECISIONS

Throughout multiple stages of the Reforms and steps of peer review, CIHR has underestimated the complexity of modeling scenarios. This spans (i) design/development of application (eg character count of references), (ii)taxonomy (eg no validation data ever presented; overlapping categories are questionable), (iii) matching applications with reviewers (algorithm serial vs parallel/multi-level convergence), (iv) rating/ranking system (percentile ranks; weighted rankings to account for number of reviewers; heterogeneity across areas), (v) cluster redesign for Project face-to-face (combinatorics; latent class), and (vi) projections for number of applicants and requested budgets (Bayesian).

CONCLUDING COMMENTS

Peer Review Reforms were conceptualized and designed with good intentions. Throughout the evolution of the Reforms, University Delegates and members of the scientific community have repeatedly raised concerns and provided input to improve architecture and mechanics. Panel Members presenting today because they: (i) believe International Review committee has the ability to influence re-reforms and instill credibility; (ii) believe in CIHR, that it is has capacity to be responsive to feedback and reachieve peer review status of world-class excellence, and (iii) believe we have responsibility to Canadian government, tax payers, and the scientific community at-large to get peer review right (or at least optimal).

[Roadmap is paved with good intentions.]

[Responsibility to Canadian government, taxpayers, and larger scientific community.]