



Introduction to the Special Section on Innovative Knowledge Translation in Sex Research

Natalie O. Rosen^{1,2} · Lori A. Brotto³

Received: 28 October 2020 / Revised: 20 November 2020 / Accepted: 25 November 2020 / Published online: 4 January 2021
© The Author(s), under exclusive licence to Springer Science+Business Media, LLC part of Springer Nature 2021

As sex researchers, we have a long history of sharing our findings through traditional channels of academic journals (*Archives of Sexual Behavior* published its first issue in 1971; *Journal of Sex Research* in 1965), conferences (*Canadian Sex Research Forum* held its first meeting in 1973; *International Academy of Sex Research* in 1975; *World Association for Sexual Health* in 1978; *European Society for Sexual Medicine* in 1995), book chapters, and in press interviews. With the advent of social media, it has become easier to immediately share our results with both academic and non-academic audiences, including educators, policy-makers, science writers, clinicians, patients, and the general public. But single tweets and blog posts necessarily have a limited reach, and their impact and uptake is typically unknown. Consequently, expectations and innovations for effective knowledge translation (KT) are fast-growing. Our research community must heed the call to ensure that sexual science translates into benefits and action for as many people as possible.

Indeed, there are many sexual topics for which the general public still lacks knowledge and understanding or for which the implementation of empirically supported interventions has lagged far behind despite strong evidence. Consider the fact that one in five young women report persistent pain during vaginal intercourse, yet only half of them will receive a diagnosis and access to treatment (Harlow et al., 2014; Landry & Bergeron, 2011). Difficulties with orgasm are the most common sexual problem reported by young women and 10% of women will never have an orgasm, yet treatment for first

orgasm through directed masturbation has been found to be 90% effective (Heiman & LoPiccolo, 1988). Meanwhile, examples of pseudo-science proliferate on the Internet resulting in widespread misunderstandings that are at best ineffective and at worst demoralizing and harmful to individuals and their sexual relationships. For example, the Gwyneth Paltrow led lifestyle brand GOOP has promoted vaginal steaming to clear the uterus of toxins and the insertion of jade eggs into the vagina to balance hormones, regulate menstrual cycles, and strengthen the pelvic floor; none of these practices are empirically supported and can indeed be harmful (Gunter, 2019a). Questions from the public about inserting garlic, yogurt, and, more recently, cannabis into the vagina, and about food supplements to increase penile size (e.g., Viril booster) are still commonly reported (Gunter, 2019b). As sexual scientists, it is our responsibility to correct misinformation and to steer people toward evidence-based knowledge and recommendations.

According to the Canadian Institutes of Health Research (CIHR), the “valleys of death” represent two well-known gaps or “valleys” in the pathway from research to enhanced knowledge and changes in practice, such as health care (Fig. 1). The first valley refers to the translation of basic science (research in laboratory settings) into clinical science (research with humans in their natural environments). The second valley refers to the translation of scientific discoveries into actual practice including knowledge, decision making, and/or behavioral change. The sheer amount of research being produced by the scientific community may inadvertently compound the problem: There are over 2.5 million scientific publications each year (Boon, 2017), with global scientific output doubling every 9 years (Van Noorden, 2014)! The two valleys coupled with the “mountains” of knowledge being produced contribute to the oft-cited “17-year gap,” which is the amount of time estimated for new scientific data to be adopted into clinical practice (Fig. 2; Green, 2008; Morris, Wooding, & Grant, 2011).

Investing in innovative KT is critical to address these issues. We organized a special section of *Archives of Sexual Behavior* on this topic to highlight some of the work being done in our

✉ Natalie O. Rosen
nrosen@dal.ca

¹ Department of Psychology and Neuroscience, Dalhousie University, 1355 Oxford Street, P.O. Box 15000, Halifax, NS B3H 4R2, Canada

² Department of Obstetrics and Gynecology, IWK Health Centre, Halifax, NS, Canada

³ Department of Obstetrics and Gynaecology, University of British Columbia, Vancouver, BC, Canada

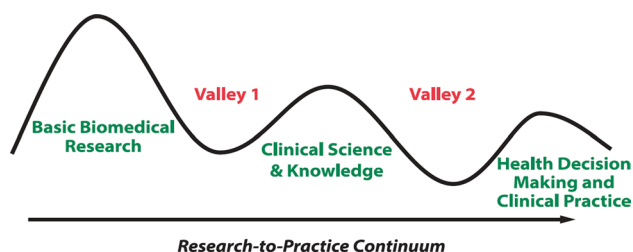


Fig. 1 Canadian Institutes of Health Research, Figure 3: Two Valleys of the Research-to-Practice Continuum”, Canada, 2012. <https://cihr-irsc.gc.ca/e/44000.html>. All rights reserved. Reproduced with the permission of the Canadian Institutes of Health Research, 2020

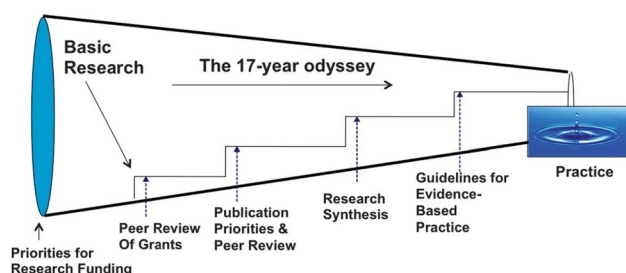


Fig. 2 The 17-year pipeline from research to practice (from Green, 2008). Making research relevant: if it is an evidence-based practice, where’s the practice-based evidence? *Family Practice*, 25, i20–i24. By permission of Oxford University Press

field. Our call for papers invited submissions using a variety of approaches to KT including, but not limited to, use of social media, videos, digital storytelling, websites, policy briefs, tool-kits, and more. The special section welcomed a variety of KT topics in the field of sex research, but the KT had to stem from the authors’ own research. Submissions were required to include a methodologically rigorous description of their KT approach and activities, including a formal evaluation. These parameters were designed to ensure that the papers in the special section would not only encourage sex researchers to consider innovative KT in their own work, but would provide guidance on how to do so.

Defining Knowledge Translation

KT includes a set of strategies designed to share scientific information with target audiences (Kirchner, Waltz, Powell, Smith, & Proctor, 2017) and are widely recognized by funding agencies as a critical aspect of research. KT was defined by the CIHR in 2000 as “The exchange, synthesis and ethically sound application of knowledge—within a complex system of interactions among researchers and users—to accelerate the capture of the benefits of research for Canadians through improved health, more effective services and products, and a

strengthened health care system” (CIHR Knowledge Translation Strategy 2004–2009). Researchers distinguish between integrated and end-of-grant KT with the former referring to the engagement of end users throughout the entire research process, and the latter referring to knowledge sharing activities that occur after a study is completed. With integrated KT, the end users contribute equally to other members of the team, including the researchers, and it is believed that, in doing so, this results in research that is more likely to be used by knowledge users. As one reads the articles in this special section, one will see several examples of integrated KT with community-based participatory research methods adopted.

Terms other than KT have been used to capture the same concept of sharing science and have included: *knowledge transfer* (commonly used in fields outside of health care); *knowledge exchange* (reflecting the collaborative relationship and bidirectional sharing of information between researchers and decision makers); and *research utilization* (commonly used in nursing and refers to moving research findings into action; Graham et al., 2006). Implementation science, on the other hand, is the scientific study of methods designed to increase the uptake of research findings into practice and policy (Foy, Eccles, & Grimshaw, 2001). It evaluates the contributing factors (e.g., barriers and facilitators) that allow successful implementation and scale-up of effective interventions in clinical and public health settings. While implementation science has also been found to close critical implementation gaps in sex research (e.g., to reduce the harms associated with sexualized use of substances in gay and bisexual men who have sex with men; Knight, 2018), this special section focuses on KT given the relative dearth of KT publications in our field of sex research.

Theoretical Frameworks for Knowledge Translation

There are several theoretical frameworks available to provide conceptual and practical guidance on how to conduct effective knowledge translation (Tabak, Chambers, Hook, & Brownson, 2017). One commonly used framework, the RE-AIM framework, was developed in the field of public health and is primarily used in implementation science, which is not the focus of the current special section. More recently, however, it has expanded to be used in planning KT projects and has been applied to policies, community-based interventions, and to reducing health disparities (Gaglio, Shoup, & Glasgow, 2013). Therefore, it may still be relevant depending on the goals of a particular project. RE-AIM is organized around five dimensions designed to determine the impact of a novel intervention: reach, effectiveness, adoption, implementation, and maintenance (Glasgow, Vogt, & Boles, 1999). Another framework that emerged from the field of health services and is also mainly focused

on implementation is called the Consolidated Framework for Implementation Research (CFIR; Damschroder et al., 2009). It draws upon several implementation theories that are organized into five key domains—intervention characteristics, outer setting, inner setting, individual characteristics, and implementation process—and can be applied at pre-, during, or post-implementation (Kirk et al., 2016).

In Canada, the Knowledge-to-Action (KTA) Cycle has been most influential in encouraging researchers to consider how their science can impact knowledge and practice (Graham et al., 2006). There are two components of the KTA cycle. The first is the “knowledge funnel” which represents the typical scientific process of creating new knowledge and, more specifically, production (i.e., formulating and testing research questions), synthesis (e.g., systematic reviews and meta-analyses), and tools/products (e.g., research publications). The “action cycle” is the second component of the KTA framework and involves a range of activities including: (1) identifying the problem or knowledge-to-action gaps, (2) adapting knowledge to local context, (3) assessing barriers/facilitators to knowledge use, (4) selecting, tailoring, and implementing interventions, (5) monitoring knowledge use, (6) evaluating outcomes, and (7) sustaining knowledge use over time. The two components of the cycle are meant to reciprocally influence each other. The KTA framework is useful as a conceptual guide for researchers; however, it does not provide specific details regarding how to approach each of the identified tasks. Finally, several researchers in the current special section were guided by community-based participatory research frameworks (Hacker, 2013; Minkler & Wallerstein, 2008) given that community engagement with relevant knowledge users is an embedded tenet of all KT activities.

More detailed KT planning tools, such as those developed and empirically tested by Barwick (2008, 2013, 2019) and the arts-based KT planning template (Kukkonen & Cooper, 2019), can complement one’s selected theoretical framework as they offer a step-by-step guide to planning a KT project. The *Knowledge Translation Toolkit* also offers practical guidance (Bennett & Jessani, 2011).

Special Section Articles

This special section highlights cutting edge KT tapping into diverse aspects of sex research. The eight included papers fall broadly into three themes. The first theme is the creation, dissemination, and evaluation of educational products via social media and websites. Beischel et al. (2020) created instructional videos explaining sexual configurations theory—a framework for understanding, measuring, and visualizing diverse partnered sexualities and gender/sex. For their #postbabyhanky-panky campaign, Rosen et al. (2020) created a series of brief videos each highlighting a core finding from their previously conducted research examining risk and protective factors for

couples’ postpartum sexuality. Finally, Brotto, Nelson, Barry, and Maher (2020) similarly created a short video titled #itsnotinyourhead to share the results of a clinical trial comparing two psychological treatments for women suffering from chronic vulvar pain. Each article in this theme showcases the power of distilling research into brief but engaging, accessible, and impactful products that ultimately increased the reach and influence of their scientific work.

The second theme of articles showcases innovative arts-based forms of KT. Gauvin, Joy, Dunn, Lee, and Williamson (2020) describe the creation and evaluation of *Rainbow Reflections*, a comic anthology focused on the body image of gay, bisexual, trans, and queer men. Carter et al. (2020) report on the development and initial evaluation of *Life and Love with HIV*, an online platform dedicated to community-led digital storytelling (written and video-based blogs) focused on shifting the narrative about women, sex, and HIV away from risk and toward pleasure. Both articles concentrate on gender/sex diverse and marginalized populations; the authors position these voices as central to every aspect of their KT projects.

The final theme of articles utilized community-based participatory approaches to develop novel toolkits and to evaluate their impact for knowledge users. Morgan et al. (2020) report on the development and implementation of a KT intervention to facilitate access to HIV PrEP among gay, bisexual, and other men. Importantly, they illustrate how community-based participatory research can, in fact, be conceptualized as KT in and of itself. Card et al. (2020) developed an online dashboard called *OurStats* to promote access to results from Canada’s largest community-based surveillance study of gay and bisexual men through the use of dynamic visualizations of the data findings. Finally, Benoit and Unsworth (2020) utilized an integrated KT approach that was inclusive of sex workers and their support organizations and describe how their research goals shifted and emerged out of the KT process in order to better meet the needs of their community partners.

Conclusions

We hope that this Special Section will spark an interest in some of the unique methods of knowledge translation available to us as sex researchers. As we stated in our introductory comments, we believe that our research community must heed the call to ensure that sexual science translates into benefits and action for as many people as possible, and as scientists at the forefront of new knowledge creation, we are optimally suited to partner with the critical stakeholders to ensure that messages derived from the science are fact-based. As one will see from the papers included, partnerships are key to effective KT, and there are evidence-based frameworks as well as toolkits to assist in our determination of what kinds of partners we should seek in this effort. Involvement of one’s target group members (i.e., who

your research is intended to help) as well as the general public must be more than simply tokenistic; there are unique roles for these individuals on our research teams, particularly in the domain of KT. Moreover, we would advance that patient/public partners, as well as other stakeholder team members, should be appropriately compensated for their participation.

In order to carry out KT effectively, projects must be adequately resourced. Thankfully, we have seen the number of grants dedicated to KT by our major as well as smaller granting agencies increase in the past decade. The CIHR as well as the National Institutes of Health have infused new funding to support KT projects. Institutes within these larger funding bodies have also created and embedded their own KT and Implementation strategic plans. We are also seeing foundations and smaller funding bodies hold special competitions for KT projects. The list is not exhaustive, so we encourage readers to reach out to their institutional offices of research services and grants for up-to-date listings of KT grant competitions. Beyond specialized competitions, we encourage researchers to incorporate a specific budget dedicated to innovative KT within their broader funding applications.

As we noted earlier, we believe that, as sexual scientists, it is our responsibility to correct misinformation and to steer people toward evidence-based knowledge and recommendations. Knowledge translation is the answer to filling this gap. We hope that this Special Section invites one to step outside of one's comfort zone and explore how one can incorporate KT practices in one's own programs of research.

References

- Barwick, M. (2008, 2013, 2019). *Knowledge translation planning template*. The Hospital for Sick Children. Retrieved April 29, 2020 from <http://www.sickkids.ca/pdfs/Learning/79482-KTPlanningTemplate.pdf>.
- Beischel, W. J., Schudson, Z. C., Hoskin, R. A., Mao, J., Zielinski, A., & van Anders, S. M. (2020). Translating knowledge of sexual configurations theory via instructional videos. *Archives of Sexual Behavior*. <https://doi.org/10.1007/s10508-020-01797-6>.
- Bennett, G., & Jessani, N. (2011). *The knowledge translation toolkit: Bridging the know-do gap*. New Delhi, India: Sage Publications.
- Benoit, C., & Unsworth, R. (2020). Early assessment of integrated knowledge translation efforts to mobilize sex workers in their communities. *Archives of Sexual Behavior*. <https://doi.org/10.1007/s10508-020-01778-9>.
- Boon, S. (2017). *21st century science overload*. <http://blog.cdnsiencepub.com/21st-century-science-overload/>.
- Brotto, L. A., Nelson, M., Barry, L., & Maher, C. (2020). #ItsNotInYourHead: A social media campaign to disseminate information on provoked vestibulodynia. *Archives of Sexual Behavior*. <https://doi.org/10.1007/s10508-020-01731-w>.
- Card, K. G., Sorge, J., Klassen, B., Higgins, R., Tooley, L., Ablona, A., ... Lachowsky, N. (2020). Democratizing access to community-based survey findings through dynamic data visualizations. *Archives of Sexual Behavior*. <https://doi.org/10.1007/s10508-020-01806-8>.
- Carter, A., Anam, F., Sanchez, M., Roche, J., Wynne, S. T., Stash, J., et al. (2020). Radical pleasure: Feminist digital storytelling by, with, and for women living with HIV. *Archives of Sexual Behavior*. <https://doi.org/10.1007/s10508-020-01822-8>.
- Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science*, 4, 40–55.
- Foy, R., Eccles, M., & Grimshaw, J. (2001). Why does primary care need more implementation research? *Family Practice*, 18, 353–355.
- Gaglio, B., Shoup, J., & Glasgow, R. E. (2013). The RE-AIM framework: A systematic review of use over time. *American Journal of Public Health*, 103, e38–346.
- Gauvin, S. E. M., Joy, P., Dunn, B., Lee, M., & Williamson, R. E. (2020). Empirical evaluation of Rainbow Reflections: A comic book anthology on body image for queer men. *Archives of Sexual Behavior*. <https://doi.org/10.1007/s10508-020-01876-8>.
- Glasgow, R., Vogt, T., & Boles, S. (1999). Evaluating the public health impact of health promotion interventions: The RE-AIM framework. *American Journal of Public Health*, 89, 1322–1327.
- Graham, I. D., Logan, J., Harrison, M. B., Straus, S. E., Tetroe, J., Caswell, W., & Robinson, N. (2006). Lost in knowledge translation: Time for a map? *Journal of Continuing Education in the Health Professions*, 26, 13–24.
- Green, L. W. (2008). Making research relevant: If it is an evidence-based practice, where's the practice-based evidence? *Family Practice*, 25, i20–i24.
- Gunter, J. (2019a). *No GOOP, we are most definitely not on the same side* [Blog post]. Retrieved from <https://drjengunter.com/2019/07/26/no-goop-we-are-most-definitely-not-on-the-same-side/>.
- Gunter, J. (2019b). *The vagina bible*. Toronto: Random House Canada.
- Hacker, K. (2013). *Principles of community-based participatory research*. New Delhi, India: Sage Publications.
- Harlow, B. L., Kunitz, C. G., Nguyen, R. H. N., Rydell, S. A., Turner, R. M., & Macle hose, R. F. (2014). Prevalence of symptoms consistent with a diagnosis of vulvodynia: Population based estimates from 2 geographical regions. *American Journal of Obstetrics and Gynecology*, 210, e1–8. <https://doi.org/10.1016/j.ajog.2013.09.033>.
- Heiman, J. R., & LoPiccolo, J. (1988). *Becoming orgasmic: A sexual and personal growth program for women*. Upper Saddle River, NJ: Prentice Hall Press.
- Kirchner, J. E., Waltz, T. J., Powell, B. J., Smith, J. L., & Proctor, E. K. (2017). Implementation strategies. In R. C. Brownson, G. A. Colditz, & E. K. Proctor (Eds.), *Dissemination and implementation research in health: Translating science to practice* (2nd ed., pp. 245–266). Oxford, England: Oxford University Press.
- Kirk, M. A., Kelley, C., Yankey, N., Birken, S. A., Abadie, B., & Damschroder, L. J. (2016). A systematic review of the use of the consolidated framework for implementation research. *Implementation Science*, 11, 72. <https://doi.org/10.1186/s13012-016-0437-z>.
- Knight, R. (2018). Investments in implementation science are needed to address the harms associated with the sexualized use of substances among gay, bisexual and other men who have sex with men. *Journal of the International AIDS Society*, 21, e25141. <https://doi.org/10.1002/jia2.25141>.
- Kukkonen, T., & Cooper, A. (2019). An arts-based knowledge translation planning framework for researchers. *Evidence & Policy: A Journal of Research, Debate, and Practice*, 15, 293–311.
- Landry, T., & Bergeron, S. (2011). Biopsychosocial factors associated with dyspareunia in a community sample of adolescent girls. *Archives of Sexual Behavior*, 40, 877–889.
- Minkler, M., & Wallerstein, N. (2008). *Community-based participatory research for health: From process to outcomes*. New York: Jossey-Bass.

- Morgan, J., Schwartz, C., Ferlatte, O., Mnzisak, C., Lachowsky, N., Jollimore, J., et al. (2020). Community-based participatory approaches to knowledge translation: HIV prevention case study of the Investigaytors Program. *Archives of Sexual Behavior*. <https://doi.org/10.1007/s10508-020-01789-6>.
- Morris, Z. S., Wooding, S., & Grant, J. (2011). The answer is 17 years, what is the question: Understanding time lags in translational research. *Journal of the Royal Society of Medicine*, *104*, 510–520.
- Rosen, N. O., Muise, M. D., Vannier, S. A., Chambers, C. T., Scott, H., & Team, P. A. (2020). #Postbabyhankypanky: An empirically based knowledge sharing initiative about sex and the transition to parenthood. *Archives of Sexual Behavior*. <https://doi.org/10.1007/s10508-020-01734-7>.
- Tabak, R. G., Chambers, D. A., Hook, M., & Brownson, R. C. (2017). The conceptual basis for dissemination and implementation research: Lessons from existing models and frameworks. In R. C. Brownson, G. A. Colditz, & E. K. Proctor (Eds.), *Dissemination and implementation research in health: Translating science to practice* (2nd ed., pp. 73–88). Oxford, England: Oxford University Press.
- Van Noorden, R. (2014). Global scientific output doubles every nine years. *Nature News Blog*, 2014. <http://blogs.nature.com/news/2014/05/global-scientific-output-doubles-every-nine-years.html>.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.