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A mixed-methods study to explore opinions of research translation held by researchers working in a Centre of Research Excellence in Australia

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ABSTRACT

Objective There is a growing need for researchers to demonstrate impact, which is reliant on successful research translation. The Australian National Health and Medical Research Council funded a Centre of Research Excellence in Stroke Rehabilitation and Brain Recovery (CRE-Stroke) to enhance collaborations between researchers conducting different types of stroke rehabilitation research. The purpose of this study was to explore opinions about research translation held by CRE-Stroke researchers conducting preclinical and clinical research, in terms of scope, importance, responsibility and perceived skills and knowledge.

Design Mixed-methods study, comprising a paper-based survey and semistructured interviews. Interview data were inductively coded and thematically analysed. Survey and interview data were compared and synthesised.

Participants 55 (7 preclinical, 48 clinical) researchers attending a CRE-Stroke research forum completed a paper-based survey. Semistructured interviews with 22 CRE-Stroke (5 preclinical, 17 clinical) researchers were conducted.

Results Research translation was described as translating to other research and translating to clinical practice and policy. Most researchers (n=54, 98%) reported that research translation was important, particularly in terms of generating research impact, but the most common sign of project completion reported by researchers (n=7, 100% preclinical; n=37, 77% clinical) was publication. Most researchers (preclinical n=4, 57%; clinical n=37, 77%) reported having responsibility for translating research, but less than half reported having the necessary skills (n=1, 14% preclinical; n=17, 35% clinical) and knowledge (n=3, 43% preclinical; n=19, 40% clinical). Differing opinions about who should be responsible for translating findings to clinical practice were expressed.

Conclusions Stroke rehabilitation researchers appear confident to translate their research via the traditional mechanism of publications. To optimise impact, clarity is needed regarding who is best placed to translate research findings to clinical practice and policy. Education and skills development to apply broader translation processes are needed to maximise the use of research at all stages.

Strengths and limitations of this study

► Participants were from one of the largest global stroke rehabilitation research centres, conducting research from basic science to clinical trials to population health.
► Small proportion of preclinical researchers compared with clinical researchers, reflecting profile of researchers involved in CRE-Stroke.
► Responses of participants may have been influenced by authors' involvement in CRE-Stroke.

INTRODUCTION

Internationally, there is a growing need to demonstrate research impact, with Australia and the UK recently including research impact in university performance metrics.[1 2] Research impact is dependent on research translation.[3] We define research translation as adapting research findings for application in a different context or for use by a different group. Our definition encompasses bench-to-bedside translation (translating basic biomedical research into clinical science and knowledge)[4] and research-to-practice translation (synthesising and applying knowledge from clinical research to healthcare services and systems).[5] Research-to-practice translation encompasses diffusion (passive release of information), dissemination (tailoring and delivering the evidence to target audiences) and implementation (identifying and overcoming barriers to assist the target audience to apply the evidence).[6]

The Australian National Health and Medical Research Council funded the Centre of Research Excellence in Stroke Rehabilitation and Brain Recovery (CRE-Stroke) from 2015 to 2019 to enhance collaborations between researchers from diverse backgrounds to accelerate the development, translation and implementation of new stroke rehabilitation

and recovery interventions and techniques.[7] CRE-Stroke is one of the largest stroke research centres globally, coordinated by The Florey Institute of Neuroscience and Mental Health (the Florey) and Hunter Medical Research Institute (HMRI), formally involving 86 (20 senior) researchers and clinicians and a broad network of affiliated members. The five nominated research streams within CRE-Stroke are Basic Science, Imaging Discovery, Clinical Trials, Implementation Science and Data Linkage.

It has been argued that translation of knowledge from preclinical research is fundamentally different from translation of knowledge arising from clinical research in terms of goals, skills required, individuals involved and the complexity of the environment.[8] Survey data from one study indicated that preclinical researchers were more likely than clinical researchers to join teams specifically designed to enhance research translation.[9] However, little is known about whether preclinical and clinical researchers perceive research translation differently in terms of importance and responsibility. The aim of this study was to explore opinions about research translation held by CRE-Stroke researchers and to identify the similarities and differences expressed by preclinical researchers (working in Basic Science and Imaging Discovery streams) and clinical researchers (Clinical Trials, Implementation Science, Data Linkage). Findings would inform strategy development to enhance research translation and subsequent research impact activities. Our specific research questions were:

► How do researchers describe research translation?
► How important is research translation?
► Who do researchers feel should be responsible for research translation?
► Do researchers believe they have the knowledge and skills to translate their research?

METHODS
A mixed-methods (explanatory sequential) design was used, where qualitative data from semistructured interviews were used to explain and interpret quantitative data from a survey.[10] Ethical approval to conduct the study was obtained from the University of Melbourne (ID 1647818.2).

Data collection
In September 2016, attending researchers at a Florey Rehabilitation Workshop and Annual Scientific Meeting were invited to complete a paper-based survey. The survey (online supplementary appendix A) was developed specifically for this study and was piloted on three researchers not involved in stroke research. Demographic data were collected, and statements about research translation with predefined tick box responses (2 statements) or a 5-point Likert scale of agreement (11 statements) were included. Completion of the survey implied consent.

Between November and December 2016, 22 interviews were conducted with purposively selected researchers to represent the breadth of CRE-Stroke research activity. When multiple researchers worked on similar projects, the most senior researcher was invited to participate. Twenty-seven researchers were invited by email to participate; five (four preclinical and one clinical) researchers declined due to being on maternity leave (n=2), unable to schedule interview (n=2) or no longer involved in CRE-Stroke (n=1). The interview guide (online supplementary appendix B) was designed to seek more detailed information about aspects of interest from the survey. Participants were given information sheets and signed consent forms prior to interviews. Two authors (EAL and SAR who were employed as research fellows in Implementation Science in CRE-Stroke and Health Research Economics at HMRI, respectively) conducted the interviews at the Florey in Melbourne, Victoria and at HMRI in Newcastle, New South Wales. Nineteen interviews were conducted in person and three over the phone as per participants' preferences and availability. All authors were known to interviewees at the time of the interviews through their mutual affiliations with CRE-Stroke, so only authors EAL and SAR had access to full interview transcripts. Interviews lasted between 30 and 60 min, were audio recorded, transcribed by a third party and checked by the interviewers and participants for accuracy. No repeat interviews were conducted.

Data analysis
Survey data
Responses from the 5-point Likert scale questions were collapsed into two categories. Positive statements were categorised as affirmative (strongly agree, agree) or not affirmative (neither agree nor disagree, disagree or strongly disagree). Responses to the negative statement 'My research cannot be translated' were categorised as *negative* to research translation (neither agree nor disagree, agree, strongly agree) or *not negative* to research translation (strongly disagree or disagree).

Data analysis of quantitative variables was performed in SPSS Statistics 21.0.[11] Frequencies statistics are presented, and χ^2 tests were used to compare the proportion of affirmative responses to the survey statements given by preclinical and clinical researchers.

Interview data
Deidentified transcripts were imported into NVivo 11.[12] Participants were grouped as preclinical and clinical researchers. Data were broadly mapped to the four research questions.

Using inductive thematic analysis as described by Braun and Clark,[13] authors EAL and SAR mapped data from each of the research questions to codes and categories. The two coders analysed three transcripts independently before checking consistency of methods and discussing the thematic coding systems. The coders then independently examined and coded a fourth transcript. At this point, there was consistency between coders, so EAL coded the remaining transcripts and regularly discussed

the coding and the development of themes with SAR who was present at all interviews and had read each transcript. Themes arising from preclinical researchers were compared with those arising from clinical researchers.

Synthesis of data from two sources
Data from the survey and interviews were compared for each of the research questions in a side-by-side comparison, to allow a further analysis through comparing consistency and meaning of responses. This is presented in online supplementary table 1.

Patient involvement
Patients were not involved in the design of this study.

RESULTS
Fifty-seven researchers completed the survey and 22 researchers were interviewed (14 had also completed the survey). Two survey respondents were not currently involved in research, so their data were excluded from analysis. Most survey respondents (n=48, 87%) were involved in clinical or health services research, just over half were women (n=32, 58%) and were enrolled in or had completed their PhD within the previous 5 years (n=28, 51%). Similarly, most interview participants (n=17, 77%) were involved in clinical research, most were women (n=15, 68%) but there was a higher proportion of mid-career or senior-career researchers involved in the interviews (n=13, 59% completed PhD 5 or more years previously). Demographic details of survey participants are presented in table 1. Further demographic details of the interview participants are not presented to preserve participant anonymity.

Survey responses from preclinical (n=7) and clinical (n=48) researchers are presented in table 2. A significantly higher proportion of clinical researchers reported measuring research impact in terms of incorporation into clinical guidelines, and numbers of clinicians using their research. There was no significant difference in proportions of preclinical and clinical researchers who agreed with the included statements regarding importance of, responsibility for and skills and knowledge in research translation, with one exception: one preclinical (14% of sample) and no clinical researchers disagreed with the statement 'It is important to me that my research is translated'.

Perceptions about the scope of research translation
In interviews, two types of research translation were described: translating research findings to other research projects and translating research findings to clinical practice or policy.

Translating to other research projects
Preclinical and clinical researchers described translating research between animal models and human models:

Table 1 Demographic details of participants and responses to survey questions

Demographic and other participant variables	n (N=55)	%
Professional background		
Physiotherapy/occupational therapy/speech pathology/exercise physiology	21	38
Science	13	24
Medicine	8	15
Nursing	3	5
Psychology	3	5
Other (health): paramedicine, pharmacy, social work, exercise science	4	7
Other (non-health): engineering, social science, statistics	3	5
When was PhD completed		
Currently enrolled	17	31
Within last 5 years	11	20
>5–10 years	8	15
>10–15 years	5	9
>15–20 years	2	4
>20 years	5	9
Not completed, not enrolled	7	13
Sex		
Male	23	42
Female	32	58
Main focus of research		
Clinical/qualitative stroke research	39	71
Basic science	7	13
Health services research	9	16

We have now very solid animal data proving … that [factor] is detrimental. And we also studied the mechanisms of [factor] at a cellular level and we have found … that [factor] is very closely connected to … secondary neurodegeneration … I would like us to consider having [factor] monitoring for the stroke recovery and the stroke rehab programs to understand each individual's [factor] level and try to counteract that [PreClinical_1].

In the [literature] review of animal models of stroke, we found that [intervention] was effective in improving … function … and based on that, we then said, Well we've got to translate this into a clinical setting. What is a feasible model? [Clinical_1].

Preclinical researchers described translation in terms of collaborations with clinical researchers, whereby newly developed laboratory or imaging techniques provided physiological data associated with the symptoms of stroke.

Once we get the tools and technologies … I would like to go and work with [clinical researchers] and

Table 2 Agreement with survey statements regarding research translation

	Preclinical, n (%) n=7	Clinical, n (%) n=48	χ^2 test (p value)
I consider each research project complete when:*			
Results are presented in publication	7 (100)	37 (77.1)	2.01 (0.16)
Findings have been incorporated into policy/practice	3 (42.9)	31 (64.6)	1.22 (0.27)
Findings have led to new trials	3 (42.9)	22 (45.8)	0.02 (0.88)
Data analysis is complete	4 (57.1)	11 (22.9)	3.61 (0.06)
Funding for trial is spent	1 (14.3)	4 (8.3)	0.26 (0.61)
Other (may be dormant, never really complete, depends on research aim)	0 (0)	3 (6.3)	0.46 (0.50)
I measure the impact of my research by:*			
Incorporation into clinical guidelines	2 (28.6)	42 (87.5)	13.3 (0.00)
Number of clinicians using my research	3 (42.9)	39 (81.3)	4.99 (0.03)
Number academic publications	6 (85.7)	35 (72.9)	0.53 (0.47)
Citations	7 (100)	33 (68.8)	3.01 (0.08)
Incorporation into policy	4 (57.1)	25 (52.1)	0.06 (0.80)
Awards or grants	4 (57.1)	22 (45.8)	0.31 (0.58)
Social and electronic media presence	2 (28.6)	15 (31.3)	0.02 (0.89)
Other (downloads, improved outcomes for stroke survivors, findings incorporated into routine use by consumers/clinicians, development of sustainable business model to support developed technologies)	1 (14.3)	4 (8.3)	0.26 (0.61)
Agreement (strongly agree/agree) with statements			
It is important to me that my research is translated	6 (85.7)	48 (100)	6.98 (0.01)
My research is not the sort of research that can be translated†	1 (14.3)	6 (12.5)	0.02 (0.90)
It is my responsibility to ensure my research is translated	4 (57.1)	37 (77.1)	1.28 (0.26)
Research translation is the responsibility of someone else in my team	2 (28.6)	16 (33.3)	0.06 (0.80)
Clinicians should be responsible for translating findings into clinical practice	2 (28.6)	32 (66.7)	3.76 (0.05)
I know which strategies should be used to translate my research	3 (42.9)	19 (39.6)	0.03 (0.87)
I have the skills to ensure my research is translated	1 (14.3)	17 (35.4)	1.24 (0.27)
There is adequate funding to support translation of my research	0 (0)	1 (2.1)	0.15 (0.70)
Spending time on research translation would take me away from research I enjoy	3 (42.9)	13 (27.1)	0.74 (0.39)
Researchers with implementation experience/interest should translate my research	3 (42.9)	25 (52.1)	0.21 (0.65)
Every research team should include a researcher with expertise in implementation	5 (71.4)	33 (68.8)	0.02 (0.89)

*More than one response could be selected.
†'Neither agree nor disagree' pooled with 'agree' for response to negative statement.

say, I think that there's an innovative way that you can look … at [factor] in your patients using say, a spot of blood … It will tell you this is your [physiological] status, or their risk of developing [symptom] [PreClinical_2].

Both preclinical and clinical researchers described translating research to develop a clinical intervention more rigorously.

[Clinical researchers] need to get talking to [pre-clinical researchers] … When you're talking … stroke rehab … we have no idea about the mechanisms of why these things work … we have to come back to that basic science … to try and understand why … things might work to inform better development of interventions [Clinical_2].

Translating research to clinical practice and policy
Most clinical researchers and several preclinical researchers described research translation in terms of changing clinical practice and clinical researchers

discussed research findings being incorporated into clinical guidelines.

> [Evidence from clinical trial] is going to … eventually be in almost all guidelines around the world, which … then is going to influence how people manage early rehabilitation [Clinical_3].

Clinical researchers also described translating research findings to health policy.

> We've been able to design it in a way … which will take it directly from being within a research project pilot environment right through to being adopted within the health system as part of policy and practice [Clinical_4].

Importance of research translation

Despite all but one of the survey participants reporting that research translation was important, seven survey participants (n=1, 14% preclinical; n=6, 13% clinical researchers) did not disagree with the statement that their research could *not* be translated. Similarly, there was some inconsistency between interview participants' opinions regarding whether all research projects needed to have translation potential. Two preclinical researchers considered that translation was not always important.

> Not every project has to have direct translation potential [Preclinical_3].

In contrast, clinical researchers consistently reported considering how their research would be used. The importance of considering translation potential at the design stage was described:

> When you're setting up a study, how important is it going to be and if it's not going to change clinical practice you have to say, should you be doing it? If it's working toward another study that's going to change clinical practice that's acceptable, but it has to have that aim in mind [Clinical_3].

There were divergent views about when research translation plans should be organised. Some clinical researchers advocated organising research translation plans at the commencement of a clinical trial. However, the trend towards creating translation plans for clinical interventions prior to their efficacy being known was raised as a concern by one participant:

> I don't know if [every project having a research translation plan] is the ideal … It's a lot of effort to do that, and how do we know if something works? … Do you start up early and engage these people and potentially waste their time? … They'll say, 'Well what's the evidence for it?' You say, 'Well we don't really know because we haven't finished the research' [Clinical_5].

Conducting new research was often a higher priority for the research team than coordinating research translation.

> [Research] translation needs to be undertaken by others otherwise the research team is not going to do any more research' [Clinical_3].

> Often … the funding runs out, the papers will get written and maybe published but then there's very little [research translation activity], you're already moving on to the next thing [Clinical_4].

When synthesising the survey and interview findings, it was apparent that research translation was deemed to be important by most preclinical and clinical researchers. Differing views of how research could be translated appeared to influence participants' perceptions of translation potential—some preclinical researchers reported that discovery research did not have translation potential, whereas other preclinical and clinical researchers reported that exploratory/discovery research could direct or refine future research projects. Translation was consistently reported to be important for generating research impact. Despite its apparent importance, translating beyond publication was not always a priority for the research team, who tended to focus on conducting and publishing new research.

Responsibility for research translation

The majority of preclinical (n=4, 57%) and clinical (n=37, 77%) researchers agreed that it was their own responsibility to translate their research. All interview participants expressed the opinion that researchers should disseminate their research findings via academic publications and conference presentations. However, differing opinions existed regarding the scope of researchers' responsibility beyond this initial dissemination; all preclinical (n=7, 100%) and most clinical researchers (n=37, 77%) reported in the survey that they considered a project complete when the findings were published.

In interviews, preclinical and clinical researchers described assuming responsibility for translating findings to other research contexts by actively seeking collaborations with other researchers.

> I'm a big believer in pulling groups of people together … because … that way we're going to get answers rather than doing it in our own little separate labs and separate research groups [Clinical_2]

There was a consistently held view that researchers had a responsibility to conduct relevant research:

> As researchers we need to be asking questions that the clinicians are asking and the consumers are pushing for [Clinical_6].

There were disparate views regarding who should be responsible for research-to-practice translation:

> I honestly think … because they are leading the research … it is the researcher's responsibility [Clinical_7].

[Research translation] should be a co-responsibility between the researchers and the clinical setting [Clinical_8].

In an ideal world, this is the job for the clinicians [Clinical_5].

Many interview participants and clinical researcher survey participants (n=32, 67%) reported that clinicians should be responsible for research-to-practice translation. The view that research-to-practice translation was an integral part of responsible health professional practice was sometimes explicitly stated.

[Clinicians] should be looking at the literature, and the key opinion leaders in that area should be… working out how they can improve their practice [Clinical_5].

It's the responsibility of every … clinician to act in a professional manner based upon the evidence available [Clinical_9].

Responsibility also lay with clinical leaders and managers to support and encourage clinicians to translate research.

The top level must have a very firm view about what's going on in the local health district or in the organization … and send out encouraging signals all the time about the necessity of [research translation]' [PreClinical_1].

Other participants reported that while research translation should be initiated by the research team, responsibility for implementation should be handed over to researchers or clinicians with expertise in translation. Approximately half of survey respondents (43% preclinical, 52% clinical) reported that researchers with an interest in implementation should be responsible for translating their research.

It's the responsibility of the team that does the research to put the translational strategies in place. But they're not going to be able to do it all themselves because that's another whole science, translating it properly. But they need to initiate the process and that might be to engage a team of people to do it [Clinical_3].

I actually do think it's everyone's responsibility, but that's not to say I'm going to do implementation … I really hope someone else would do it … someone who's trained in implementation [Clinical_10].

Peak organisations such as the Stroke Foundation and state clinical and funding bodies were identified as having some responsibility for large-scale translation projects.

I think the [state bodies] have got some responsibility to disseminate the information and look whether that is a priority, to look at services … to say okay, well [Health Service] has tried this, who wants to put their hands up in a larger project to trial it or implement it? They'll give you guidance at the same time … And

then if it's bigger than that it would be almost the National Stroke Foundation to run it from a national level [Clinical_11].

In synthesising data from the survey and interviews, preclinical and clinical researchers consistently reported having a responsibility to publish and present their results to the academic community. Many reported a responsibility to ensure that the research findings would be of value to other parties such as researchers, clinicians, people with stroke or policy-makers. However, there was inconsistency between both preclinical and clinical researchers regarding their responsibility to support other parties to apply the disseminated findings, which may limit translation and subsequent impact of research being conducted within CRE-Stroke.

Skills and knowledge

Less than half of the survey respondents reported that they had the skills (n=1, 14% preclinical; n=17, 35% clinical) and knowledge (n=3, 43% preclinical; n=19, 40% clinical) to translate their research beyond the narrow remit of publications and conference presentations:

[Research translation] is not really where my skill sets lie [Preclinical_2].

I'm not trained in implementation … that's not my skillset [Clinical_10].

Clinical researchers consistently stressed the difficulty and complexity of research-to-practice translation, and most felt inadequately skilled to coordinate these activities. Many interview participants recommended seeking input from people with expertise in research-to-practice translation, which was consistent with the majority of survey respondents (n=5, 71% preclinical; n=33, 69% clinical) who reported that every research team should include a researcher with expertise in implementation:

[Research translation] is such a complex area, it's a little bit naive of me to say I can do that. It needs to be the implementation experts involved in that … I know enough to know I don't know enough about how you would do an effective translation project [Clinical_2].

A lack of common understanding between clinical researchers and clinicians was also reported, which could make research-to-practice translation difficult:

Researchers and clinicians don't necessarily understand each other's world very well. So anything that helped clinicians understand the importance of the research findings … or that helped researchers understand what it's going to be like to try and translate that into a real-world setting … will be useful [Clinical_8].

In contrast to the reported difficulties of research-to-practice translation, researchers' self-reported lack of translation skills did not appear to adversely influence

translation of research findings to other research projects. Researchers reported that research translation was facilitated by the close collaborative networks within CRE-Stroke.

> In the Australian community … there hasn't been as productive interactions between [neuroscientists and the rehabilitation community] as there could have been … I think part of [research translation] is to move over those historical and cultural and personality-based issues to move forward … to say 'here's an idea. Could this be relevant? Could this be a value add?' And I think that's very difficult to do that … Every day I'm really happy to be surrounded by the network of people in the CRE [Preclinical_2].

Both preclinical and clinical researchers reported that the terminology used by different research groups could make these discussions more difficult:

> There is still a divide between experimental basic research and implementation research, and sometimes it is that we're not speaking the same language [Preclinical_4].

Researchers with authorised roles in clinical settings reported more confidence in their ability to coordinate research-to-practice translation, with one participant giving the example:

> In a high intensity teaching hospital environment … we developed protocols [to implement research findings] … At weekly meetings, if the protocol wasn't adhered to, there would always be questions asked, 'Why didn't you follow the protocol [Clinical_3].

Findings from interviews and surveys indicated that preclinical and clinical researchers were frequently lacking confidence in research translation skills and knowledge. Looking deeper, participants' knowledge and skills were deemed by both groups of researchers to be adequate for research-to-research translation, which, although challenging, was facilitated by the expectations within CRE-Stroke and by pre-existing interdisciplinary research networks. Similarly, researchers felt confident to coordinate diffusion and dissemination of their findings.

In contrast, the implementation stage of research-to-practice translation was consistently described as difficult and complex, and a 'science in itself'. Apart from researchers who had formal positions within health services, preclinical and clinical researchers reported a lack of confidence regarding their skills and knowledge to coordinate implementation of research findings.

DISCUSSION

In this study, the opinions about research translation held by leading Australian stroke rehabilitation researchers were obtained. The intricacies of research translation within one research community have been highlighted, with different descriptions of research translation,

differing values placed on translation and a lack of clarity regarding who should be responsible for research translation. These findings reflect the emerging thinking regarding research translation in the international literature, where complexity theory[14] (making sense of the 'mess' that is the real world in which implementation occurs) is being espoused to guide and understand research translation, rather than the outdated linear 'pipeline' model.[15]

While the numbers of clinical researchers outweighed preclinical researcher participants in both the survey and the interviews, patterns emerged from the opinions of the two groups. Similar themes arose from preclinical and clinical researchers when asked to describe research translation. Along with the traditional 'bench-to-bedside' translation, both preclinical and clinical researchers described translating from 'bedside to bench', where the physiological mechanisms or biomarkers associated with clinical signs and symptoms relevant to stroke recovery were investigated. The importance of viewing research translation as an iterative process, using circular rather than linear models has been reported previously[16] and is important in CRE-Stroke to contribute to a clearer understanding of the physiological underpinnings of stroke recovery and a better knowledge about which stroke survivors are likely to respond to different therapies.

Despite preclinical and clinical researchers frequently having different goals from research translation, similar views were expressed by the two groups about lacking the skills and knowledge to translate research. Researchers were particularly lacking confidence with their ability to coordinate the implementation phase of research-to-practice translation and did not always see this as their responsibility. Traditionally research-to-practice translation is initiated by researchers disseminating their research results to the target users (clinical teams)[4] who then determine the importance of the research and decide whether to attempt implementation.[17] This handover of responsibility for implementation can be problematic, with consistent evidence globally of evidence-practice gaps[4 18–20] and substantial delays between dissemination until application in clinical practice. The phases of research-to-practice translation (ie, diffusion, dissemination, implementation) for which researchers felt responsible were varied and numerous parties were nominated as having responsibility for implementation. Our findings reflect the discord in the international literature, where responsibility for research translation has been attributed to researchers,[4] clinical teams,[21] shared between researchers and funding agencies[22] or between researchers and clinical teams.[5] It is recognised that having a one-size-fits-all approach to all research-to-practice translation projects is impractical.[23] Further, it is important to acknowledge the specialised and discrete skills required for conducting research versus research-to-practice translation.[23] The party(s) responsible for research-to-practice

translation must have buy-in and credibility with the end-users,[23 24] which might recommend particular individuals to coordinate particular projects regardless of their research or clinical background. The opinions of non-researcher clinicians were not sought in this study. However, the difficulties clinicians face to stay abreast of the ever-expanding body of research knowledge are well-documented,[25 26] making the delegation of full responsibility for translation of disseminated results to clinical teams impractical.

The point at which research is deemed to have been 'translated successfully' requires clarification. The explicit research translation requirements from most international funders of health research are that results and summaries for lay people are published.[22] Therefore, funders are supporting the premise that translation is complete when results are disseminated. While impact is a new metric being introduced into Australia's Excellence in Research Assessment from 2018 to evaluate university research performance,[1] it forms a small component of the assessment which is heavily weighted towards publications' citations. Similarly, in the UK's Research Excellence Framework, impact forms only 25% of the assessment.[2] Currently in Australia, there is no dedicated funding source to support implementation of positive research findings, which prevented some interview participants from overseeing their desired research-to-practice translation activities. Further, no group has a clear mandate to coordinate implementation, so no party is adequately incentivised, supported or held accountable to ensure that patients receive appropriate evidence-based care.

Findings from this study will inform strategies to support research translation and impact for CRE-Stroke. First, a series of education and skills development workshops has been organised to address the reported needs of both preclinical and clinical researchers regarding research translation. Second, clinical stipends have been granted to support small-scale collaborative projects between CRE-Stroke researchers and clinicians to build research capacity, build capacity for research-to-practice translation and to enhance researcher–clinician networks. Third, in an embedded validation study (described in full elsewhere),[27] the Framework to Assess the Impact from Translational health research[3] will be applied to workstreams within CRE-Stroke to encourage research translation and assess research impact. Ongoing discussions will be held with key stakeholders to highlight the uncertainties regarding responsibility for implementation of positive clinical research findings.

This study is unique because participants were conducting research across the spectrum from basic science to population health. Data were collected within a stroke rehabilitation research community, but the findings are relevant to other areas of health research, conducted within similar institutions and funded by similar agencies. Having EAL and SAR (both CRE-Stroke postdoctoral researchers within their first 6 months of affiliation with the CRE) conduct the interviews may have influenced participants' responses about research translation to be more favourable given that research translation is a cross-cutting theme of CRE-Stroke. Conversely, participants may have been more likely to identify barriers to translation, given the two interviewers understood the complexity and context of research translation within CRE-Stroke and had framed the interviews as a means to inform the development of strategies to enhance future research translation and impact. All participants were informed that only EAL and SAR had access to the raw data. EAL was based at a separate university from all participants, and SAR had not had prior contact with the majority of participants prior to the interviews. A limitation of the data and subsequent analysis is that most survey and interview participants were clinical researchers, reflecting the profile of CRE-Stroke researchers and affiliates.

CONCLUSION

It is promising that the majority of preclinical and clinical researchers recognise the importance of research translation and feel confident to translate their research findings to other research projects. However, the lines of responsibility to ensure research findings are translated to clinical practice and policy need to be clarified to maximise impact and to allow responsible parties to be supported with appropriate resources and training.

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