ABSTRACT BOOK

THE ECOSYSTEM OF EVIDENCE

Lessons learned in the pandemic era and future challenges

10th International Conference for EBHC Teachers and Developers
10th Conference of the International Society for EBHC
Taormina, 25th - 28th October 2023

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1. Engaging citizen partners within a rapid review process

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BACKGROUND. Rapid evidence reviews seek to answer pressing policy and practice questions within a limited timeframe. The reviews are intended to provide syntheses of the best available evidence as a basis for decision making. Although rapid reviews are effective at bringing together research evidence, the perspectives of people who may be most affected by the subsequent decisions are often absent. As an approach to improving the relevance of rapid reviews, the National Collaborating Centre for Methods and Tools' (NCCMT) Rapid Evidence Service (RES) invites citizen partners with lived experience to participate in the development of rapid evidence reviews on various public health topics, including the COVID-19 pandemic. This engagement process is developed for public partners to make meaningful contributions throughout the review process while maintaining accelerated timelines.

AIMS. The aim of the NCCMT's RES is to respond quickly to priority public health topics and questions by synthesizing the best available evidence within a limited timeframe, which supports public health decision making. Additionally, the NCCMT aims to make reviews accessible and relevant to the public by incorporating the perspectives of people who may be most affected by the subsequent decisions.

METHODS. Public partners were identified through a pool of interested individuals and compensated for their time. The process began with an initial call to orient them to the review question and hear their perspectives on the topic. Their input provided nuance to the understanding of the review question. Following the evidence search, quality appraisal, and synthesis conducted by the NCCMT team, a draft review was circulated to participants and a second call was held to receive feedback. Citizens provided meaningful insights into gaps in the existing research and the implications of the findings for policy and practice, and their comments were incorporated into the summary. Based on their feedback, partners were given a final opportunity for review before publication.

RESULTS. Twenty public partners were successfully engaged across 14 rapid evidence reviews, bringing unique insights and perspectives that improved the relevance of the reviews. A public engagement process has now been effectively incorporated into the rapid review protocol. Input from partners can be presented within the review document, whether pulled out separately from the research summary or incorporated along with the summary of findings.

LIMITS. There are some limitations to this work. Given the quick turnarounds and tight timelines associated with the rapid review process, there is limited time to build relationships and train researchers and citizen partners on meaningfully collaborating and participating. Finding citizen partners with the experience and background needed for a specific review can also be challenging, as partners are mainly recruited from an external pool. Consequently, when no citizen partner that meets our criteria for inclusion can be found, citizen perspectives cannot be integrated into that rapid review. Strategies to combat these limitations include agreeing on roles and responsibilities from the onset, offering training and resources for researchers and citizen partners ahead of time and recruiting through multiple channels.

CONCLUSIONS. Rapid reviews benefit from involvement of people with lived experience throughout the evidence synthesis process. The NCCMT's RES was able to successfully respond to time-sensitive needs for evidence syntheses that answer pressing questions for decision makers. In addition, public partners were successfully engaged in the rapid evidence review process, thus addressing a significant gap in the evidence synthesis and decision-making process. As a result, public partners were able to provide valuable insights into gaps in the existing research and the implications of the findings for policy and practice. The standard rapid review protocol for the NCCMT's RES now includes a public engagement process and options for incorporating input from public partners in the review document.

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2. Increasing value of health research by making evidence-based funding decision

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BACKGROUND. A massive amount of resources are wasted on health research. One key source of waste is redundant studies commenced without evaluating what is already known. Cumulative meta-analyses have shown, if a systematic review had been conducted, many wasteful and unethical studies could have been prevented. But, for decades, almost all funds in health research have been allocated based on peer review, which is notoriously unreliable and also ineffective at selecting the most impactful proposals. Funders might turn to peer review rather than evidence from systematic reviews in their funding decisions because it is often difficult to clearly determine whether a new study is warranted based on systematic review results, prospectively. Although there are various methods to assess whether a systematic review has conclusively answered a research question, all have substantial limitations.

AIMS. We aimed to show that funders can assess how valuable new research proposals are using systematic review and value of information analysis results in their funding decisions.

METHODS. The expected value of sample information (EVSI) is the value of reducing uncertainties by collecting data in a new study. By calculating the expected net benefit of sampling (ENBS), which is the difference between the EVSI and the study cost, the potential societal benefits of the new study can be estimated. To demonstrate how funding decisions could be informed by these methods, we applied these value of information analysis methods to the existing cumulative meta-analysis by Lau et al. (1992) and decision analysis by Midgette et al. (1994), which examined the benefits of Streptokinase. For each step of the cumulative meta-analysis, we calculated the ENBS of a hypothetical new randomised controlled trial (RCT) planned with the same sample size as the one used in the RCT included in that step. We used the results of the cumulative meta-analysis from the previous step as the prior distribution for the effect size. ENBS was estimated for the treatment decision of 500,000 new acute myocardial infarction cases in the USA and short-term inpatient outcomes with a time horizon of 12 months.

RESULTS. The cumulative meta-analysis by Lau et al. (1992) included 33 RCTs published between 1959 and 1988. The median ENBS of 32 hypothetical RCTs after the first RCT was -$150,032.62 with the interquartile range (IQR) of -$535,152.13 and $72,995,143.07. The five early RCTs had very large ENBS values of $2,578,160,862.99, $6,812,348,390.85, $5,347,912,425.47, $2,648,313,233.76, and $1,463,282,930.76, respectively. Then, the ENBS decreased over time with the accumulation of evidence, and it became negative with a 1976 RCT. All hypothetical RCTs since 1976, except for two RCTs: one from the UK (1976) and the other from Australia (1977), had negative ENBS with a median value of -$277,315.55 (IQR, -1,151,830.78 and -$166,103.87). One study from 1988 with the biggest sample size of 17,187 participants had the largest potential loss to society with an estimated ENBS of -$64,085,771.86.

LIMITS. The results presented are obtained by retrospectively applying the value of information analyses to existing data from a cumulative meta-analysis and decision model of Streptokinase, which is no longer used in practice. Also, our results depend on various assumptions including the willingness to pay threshold.

CONCLUSIONS. We demonstrated that the merit of new research and its trajectory over time with evidence accumulation can be assessed by incorporating the results of a systematic review and cumulative meta-analysis in the value of information analysis. Some of these RCTs would have never been funded if funders had been aware of their societal values from our results. Using this method, funders can make evidence-based funding decisions to support research proposals that will maximise the potential societal benefits and thus contribute to addressing the problem of waste in health research.

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3. Teaching EBM in general practice in the Netherlands; the power of a national network

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BACKGROUND. In the Netherlands, EBM is an essential part of the three yearly GP specialty training program at the eight academic university GP teaching centers. GP EBM teachers have joined forces and form a unique national network since 2015.

AIMS. The aims of this network are sharing ideas, best practices, teaching methods and materials, all with a shared vision on GP EBM education. With this network we support further implementation of EBM in local GP education programs for trainees, supervisors and staff, with a main focus on applying EBM in daily GP.

METHODS. In live and online meetings, EBM teachers of the eight GP teaching centers regularly share local experiences, obstacles and best practices. Themes relevant to EBM teaching practice are scheduled and discussed. We organized an online platform for sharing teaching materials and guest access accounts for each local electronic learning environment.

RESULTS. We agreed on a shared vision on EBM teaching and collaborated on the development of teaching materials. During national workshops and conferences for GP supervisors and staff we were able to advocate integrating EBM in (teaching) practice. Further, through this collaboration we were able to propose teaching goals and competencies at a national level. In 2022, we formulated new EBM quality indicators to be part of the quality assessment of the GP specialty training institutes. Last year new national EBM core competencies for trainees were formulated, emphasizing the importance of applying and assessing EBM in GP practice. Collaborating in this network empowered some GP EBM teachers to increase allocated EBM teaching time in their local curriculum. EBM has become part of the curriculum of all new GP teachers as part of their professional and educational training. New GP EBM teachers are, as part of the network, easily brought up to speed on the current knowledge and state-of-the-art teaching methods regarding EBM.

LIMITS. This national network is situated in a small country with a base of collaboration between the eight GP specialty training institutes already existing, making it feasible to find each other and work together.

CONCLUSIONS. Sharing a clear vision on EBM teaching and sharing best practices nationwide empowers individual EBM teachers in local settings of GP specialty training. This helps to emphasize the importance of teaching and assessing useful and in GP practice applicable EBM competencies for GP trainees.

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4. International collaboration to increase efficiency of updating evidence syntheses to support guidelines for disease prevention

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BACKGROUND. Living evidence syntheses methods, resulting in living guideline recommendations, have emerged as an approach for dealing with contexts in which there is rapidly accumulating evidence, such as the COVID-19 pandemic. Updating methods of evidence syntheses that serve as the foundation for clinical practice guidelines (CPGs) are poorly described in methodological handbooks and the literature. There is little evidence documenting their acceptability and feasibility and whether the resulting quality of the evidence syntheses and CPGs are adequate.

AIMS. The aims of this project are to determine: 1. Whether living evidence syntheses compared to other evidence syntheses updating methods leads to better CPG-related outcomes, including: a. the quality of systematic reviews, b. the quality of "living" CPGs or CPGs that rely on "living" systematic reviews, and c. the credible and implementable recommendations from "living" CPGs or CPGs that rely on "living" evidence syntheses. 2. Whether the current evaluation tools are appropriate for "living" evidence products.

METHODS. We will present the results of two scoping reviews of the literature that will document the landscape of: 1) the available living evidence syntheses, and 2) the available living CPGs. Following the results of each scoping review, identified living evidence syntheses will be assessed for their quality using AMSTAR II and identified living CPGs will be assessed for quality using AGREE II and AGREE REX. Users, developers, and researchers of systematic reviews and CPGs will be asked about the generalizability of the AMSTAR II, AGREE II, and AGREE REX to assess the quality of "living" evidence products.

RESULTS. We will present the results of the scoping review and the results of the quality of the "living" evidence syntheses and "living" CPGs. We will present the results of focus groups and surveys with participation by members of the international communities of systematic review and CPGs (users, developers, and researchers); we will profile their perspectives about the appropriateness of existing evaluation tools and their applicability to "living" evidence products.

LIMITS. Limitations of the project will be discussed in detail following the results of our research.

CONCLUSIONS. The results of this project will supplement the current evolving evidence base of living guideline methodology and provide the foundations for continued development in quality and reporting guidance. These findings aim to highlight areas to maximize research efficiencies and reduce waste for groups conducting evidence syntheses, guideline developers, and policy makers.

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5. Evidence-based decision-making - development and piloting of an online training for nurses

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BACKGROUND. The German-speaking Network for Evidence-Based Medicine e.V. revised its basic curriculum Evidence-based Decision-Making in 2017 fundamentally. Since then, the curriculum was didactically realized and tested with different target groups.

AIMS. Based on the basic curriculum Evidence-Based Decision-Making of the Network an online training for nursing professionals (academic and non-academic) was developed and pilot tested regarding feasibility and acceptance.

METHODS. Development: The training is designed in a blended learning format with 32 teaching units over 10 weeks (virtual presence 10 learning units; self-study 22 learning units) and includes six modules: Introduction, randomized controlled trials, systematic reviews and guidelines, literature search, diagnostic studies, application (evidence-based health information and shared decision-making). Learning resources (including screencasts) were made available on a web-based learning platform. Piloting: Registered nurses were able to participate in the training free of charge. Field notes from instructors and feedback from participants were transcribed to assess feasibility and acceptance. Participants s were invited to complete an online questionnaire measuring critical health literacy (CHC-test) before and after training and to participate in focus group interviews after training (immediately + 6 months later). Data were analyzed using qualitative content analysis.

RESULTS. The training was conducted from 09/21-12/21 with 55 participants distributed in four cohorts. Due to workload (pandemic), 24 participants interrupted participation. Prior knowledge (self-reported) was very heterogeneous. Motivation for participation included a desire to strengthen one's profession. The learning materials and a case study on prevention of post-thrombotic syndrome were considered helpful and attractive. The participants intended to continue using the materials after the training. Some participants expressed a desire for a higher proportion of virtual presence. Scoring of the CHC-test revealed mean person parameters of 427 ± 120; range 71-598 (pre-test, n=15) and 417 ± 228; range 64-703 (post-test, n=20). At the focus group after 8 months, 3 persons participated. These were still motivated to implement the acquired knowledge in their working areas. However, it was challenging to transfer evidence into practice because of a lack of awareness in the team.

LIMITS. Selection bias could have been occurred because only a small proportion of learners agreed to participate in the evaluation.

CONCLUSIONS. Overall, the training proved feasible and the format allowed many nurses to be reached. Participation requires a high level of motivation and willingness to self-organize. To promote sustainability, mentoring of the participants beyond the training would be desirable, for example.

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6. Making decisiontrees from guidelines

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BACKGROUND. The question arises if the current format of clinical practice guidelines (CPGs) suffices in an era where palliative care becomes ever more personalized. The essence of guideline recommendations is often intertwined in cumbersome large texts divided over different modules in the guideline. This impedes clinical implementation and quick modular revisions needed to deal with an ever growing amount of knowledge and flexibility, especially during such a time as the COVID-pandemic.

AIMS. Health care is becoming increasingly data-driven and personalized, putting a strain on development and application of Clinical Practice Guidelines (CPG). To address this problem, we developed a methodology to represent CPGs by data driven, non-probablistic clinical decision trees (CDTs). We applied our method to the Dutch national CPGs for various cancers and since 2019 also for palliative care guidelines: Ileus, Pain, Palliative sedation, Delirium, Anxiety and COPD.

METHODS. We developed a method to model guideline recommendations as data (patient and tumor characteristics) driven CDTs that are both clinical and computer interpretable. Each guideline was translated into non-probabilistic CDTs. CDTs are visualised by nodes, branches and leaves, representing data-items (population characteristics, e.g. live expectation), data-item values (e.g. <=4 weeks) and recommendations (e.g. explorative surgery), respectively. Accordingly, a path through a tree describes the population to which a recommendation applies. CDTs are developed for each step in the care pathway (e.g. diagnoses, treatment, follow-up).The collection of all data-items serve as a clinical vocabulary for implementation in electronic health record (EHRs), which is a requirement for computer assisted CPG implementation in daily practice. CDTs are published on the software platform and App (Palliaguide). Palliaguide provides targeted, step-by-step, transparent recommendations. It contains all available information that is important for a type of patient at that specific moment and clearly shows the recommended interventions. Moreover, advice on a different choice can easily be consulted in CDTs. Palliaguide is publicly available and free of charge (www.palliaguide.nl).

RESULTS. All the CPGs were successfully translated into non-probabilistic CDTs and verified by multidisciplinary teams of care professionals responsible for the original CPGs. The CPGs could be represented 21 (Ileus) separate CDTs. These trees were driven by 30 unique data-items, that composed the clinical vocabulary. Decision trees were integrated in an interactive decision support application (www.palliaguide.nl, in Dutch, accessible free of charge). With the vocabulary as a fundamental component, the application is ready for EHR connection by design.

LIMITS. Making CDTs works for palliative care only at the symptom guidelines.

CONCLUSIONS. Guidelines can be represented by decision trees and used as a basis for clinical decision support systems. The clinical vocabulary associated with the CDTs facilitates CPG implementation in EHRs and serves as a requirement for a closed-loop learning cycle from clinical practice to guideline development.

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7. Creating infrastructure to support a learning health system with rapid, high-quality evidence

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BACKGROUND. Learning health systems iteratively and systematically gather data to generate evidence that can be implemented into practice to improve care. Implementing evidence-based practices requires quickly and rigorously evaluating topic areas where evidence is emerging, uncertain, or has gaps. We created an Evidence Synthesis Unit (ESU) to create rapid, high-quality evidence summaries to inform clinical practice and guidelines. An integrated unit within the Center for Learning Health System Sciences (CLHSS), the ESU was established in November 2021 at the University of Minnesota.

AIMS. The ESU aims to provide rapid, high-quality evidence summaries to inform clinical practice and guidelines. We aggregate information to resolve conflicts between guidelines and review evidence around new, emerging, or time-sensitive topics to inform diagnostic, treatment, and service delivery decisions. We collaborate wherever possible with the 5 units within the CLHSS. In our first year, we partnered with the M Health Fairview Health System to build evidence synthesis into their guideline processes.

METHODS. The ESU worked extensively to establish clear processes and milestones for accepting and executing projects. We begin with reviewing a standard intake form submitted by the requesting individual or group. We then assess proposals to ensure they are aligned with ESU priorities and capacity. Approved project requests move forward to a problem framing meeting. This meeting is for identifying underlying issues, clarifying research questions, and discussing timeline, stakeholders, and target audience. We next draft a Scope of Work (SOW) to describe the project background, state research objectives using the Population-Intervention-Comparator-Outcome format, and present a timeline for completion of the work. Once the SOW is accepted by the requesting group, the work of evidence synthesis begins in collaboration with librarians at the University of Minnesota's Evidence-Based Practice Center. During this phase, we work closely with the requesting group to ensure their questions are being answered. Finally, we offer a formal presentation of findings and a summary report.

RESULTS. Since March 2022, the ESU has completed 5 rapid evidence reviews with 5 underway. These projects span an array of disciplines (e.g., surgery, pharmacy, primary care) and initiatives (e.g., sinusitis treatment, antibiotic irrigation in surgery, mammography screening intervals). On average, projects take 4 months to complete. Our products have driven practice improvement by informing system-wide guidelines and departmental and division-specific policies. For example, the evidence review on appropriate antibiotic irrigation solution in orthopedic joint surgery informed a system-wide policy. After a project concludes, we survey the requesting group, asking respondents to rate their experience working with the ESU in the following areas: expertise of the evidence synthesis team, responsiveness of the evidence synthesis team, ease of the evidence synthesis process, timeliness of deliverable, and overall experience. As of February 2023, all ratings received for each of these categories have been "Excellent" or "Good." Through our work, we sometimes find little evidence to inform clinical decision making in certain topic areas. When such a discovery is made, we partner with the CLHSS RapidEval Unit—which generates high-quality new evidence on healthcare practices—to help fill in the gap with real-world data, with the intention to publish for wider consumption. We have also identified a project with another CLHSS Unit—the Program for Clinical AI—to test the potential to complement human-driven processes for diffuse topic areas like social determinants of health.

LIMITS. We encountered a number of limitations in creating and implementing the ESU. One is the challenge of identifying appropriate stakeholders within the care organization. Each organization has unique processes for implementing evidence-based care. This makes it crucial to understand the people and structures that inform integration. We have addressed this by creating an integration lead role to bridge the gap between healthcare and research institutions. Also, more work is needed to develop a model to ensure financial sustainability, including a reimbursement model, or prioritizing projects with grant

potential, etc. Finally, another challenge is the highly variable time needed to complete projects, which depends on the needs of the requesting group and the clarity of the research question.

CONCLUSIONS. Dissemination and implementation research shows that without targeted efforts, it can take nearly two decades for evidence to be implemented into practice. An evidence synthesis infrastructure is necessary to provide guidance to support the decision making that goes into providing high-quality patient care. An integrated evidence synthesis unit can greatly accelerate the rate at which evidence affects practice.

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8. Perception and attitude towards EBM in the GP specialty training in the Netherlands: an explorative qualitative study.

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BACKGROUND. EBM is considered an important part of the GP specialty training in the Netherlands. However, in the current daily medical practice the GP trainees appear not to apply EBM to its full potential. A number of barriers have been identified which may hamper the application of EBM in practice: a perceived lack of time, uncertainties about their own level of EBM skills, limited available scientific evidence and the attitude of GP towards EBM. Our hypothesis is that the attitude of GP trainees and their supervisors regarding EBM is essential for cultivating the use of EBM in daily practice. In order to improve the outcomes of the educational programme regarding the use of EBM in daily practice we need to gain more insight into the current perceptions, thoughts and opinions around EBM.

AIMS. The aim of this study is to explore the perception of and attitude towards EBM in the GP specialty training among GP trainees and their supervisors. Our research questions are: 1. What does EBM evoke in GP trainees and their supervisors? 2. How is the use of EBM embedded in daily practice of GP trainees and their supervisors?

METHODS. This research is an explorative qualitative study using online focus groups to identify the images, opinions and judgements. Potential participants of four GP specialty training institutes will receive an invitation to participate by e-mail. If interested, additional information concerning participation will be provided by the research assistant. Separate focus groups with trainees and supervisors will be held in spring 2023. The focus groups will be conducted using MS Teams and transcribed verbatim. The thematic analysis will be done independently in MaxQDA by two researchers and their results will be discussed within the research group. The study obtained ethical approval from the Ethical Review Board of the NVMO (Dutch Association for Medical Education, NERB 2022.7.11)

RESULTS. Insight into the perceptions and attitude towards EBM is essential to improve the transfer of EBM education into its use in medical daily practice. The results of this study will be available in summer 2023 and we will present these results at the conference.

LIMITS. This is an explorative qualitative study with GP trainees and their supervisors. A potential limitation might be selection bias, from the expectation that GP trainees and supervisors with a special interest in EBM are more likely to participate.

CONCLUSIONS. We will investigate the attitude of EBM in the GP specialty training among GP trainees and GP supervisors. Data collection and analysis will take place between March and July 2023. We will present the results at the conference.

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9. The learning curve of bachelor nurses in a four day Evidence Based Practice course

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BACKGROUND. Evidence-based practice (EBP) was introduced into nursing in the late 1990s. EBP was introduced at the Dutch universities in the mid-00s, but daily practice did not yet align with the field of EBP. In 2012 a new professional nursing standard with new items was introduced in the Netherlands by the professional association V&VN, which include e.g. EBP skills and research. The first group of newly trained bachelor nurses(BN), according to the new standard graduated in 2020. Hospitals realized that BN, who graduated before 2020, may have a knowledge gap, while they are expected to work according to the new nursing standard. In the Martini Hospital Groningen a special program was organized for these BN, so they could also work on the same level as the newly graduated BN in the nearest future. A total of 4 learning modules were given: EBP, nursing leadership, clinical reasoning and coaching. For EBP 4 days were available to upgrade EBP skills, a difference of 2.5 days from the internal training that has been available since 2011.

AIMS. Aim of this study was to assess the effects of the introduction of an 4-days educational program on EBP in a Dutch General Hospital on knowledge, skills, attitudes and perceived barriers of BN.

METHODS. From March 2019 until October 2020, a multiple-cohort study with a pre-post-test design was performed at the Martini Hospital Groningen. During a 4-days EBP course within a training program to upgrade BN. The knowledge of EBP differs in the group from no experience to worked with it recently. All BN who graduated for >2 years were trained. A total of 48 registered nurses were asked to fill out the validated Dutch Modified Fresno (DMF), measuring knowledge and EBP skills, the McColl questionnaire (McC), measuring self-perceived knowledge and the Barrier scale (BS), measuring perceived barriers for EBP, before and after the course. Ten nurses were excluded because they only completed the pre- or post-test, leaving 38 nurses for analysis.

RESULTS. An increased DMF score was shown at the follow up for 34 participants. The Mean baseline DMF score was 50.44 (SD=21.44) and increased significantly to a score of 68.26 (SD=18.94) (p=.00026, CI=-27.06- -8.57). Self-perceived knowledge increased on all scientific terms significantly, except for "power calculation". Attitude towards the currant approach of promotion of EBP is significantly less positive post education (p=.009). After training, people think clinical practice is less evidence-based (52%) than before they started training (63%) (p<.001).The statement that EBP places additional demands on already overburdened nurses has changed significantly, that is, there is less agreement with the statement (p=.003). Pre- and post-education the items "The nurse does not have time to read research" and There is insufficient time on the job to implement new ideas" were mostly perceived as barriers. Both items relate to subscale "setting barriers and limitations". Other barriers that were often perceived were related to the subscale Nurse and Setting. Additional barriers were added by twelve respondents, mostly related to available time in practice for EBP. Also language of research articles and implementation of EBP results were added barriers. Professional support, time, collaboration, quality of care, money and dissemination of EBP results are mentioned as facilitators in the use of results of research and EBP.

LIMITS. The study was limited by the Covid pandemic: 10 participants were not able to complete the pre- and post-test because they could not attend due to COVID. Therefore they were excluded. The BN had different backgrounds on EBP: some have learned EBP at university, but the skills had subsided, for others EBP was completely new. The course had mandatory attendance, which could have biased the results of the tests due to lack of motivation.

CONCLUSIONS. The learning curve of bachelor nurses show a significant increase in knowledge about EBP and an increase in self-perceived knowledge and attitudes towards EBP. Further research is necessary on the difference of groups in prior knowledge on EBP.

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10. The impact of Evidence Based Practice on daily nursing and allied health practice

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BACKGROUND. Evidence-based practice (EBP) was introduced into nursing in the late 1990s. EBP was introduced at the Dutch universities in the mid-00s, but the results of EBP are difficult to implement in daily practice. The implementation of EBP results are often left to the good graces of the researchers that reported the results. When the researchers experience barriers, they are often discouraged which results in not being disseminated and implemented. The barriers that are perceived are often related to time and staff. Arguments of management for not planning time for EBP is that it is time consuming, which is not in favour for the patients. But instead, EBP is a tool to make practice evidence based which can also be less expensive and time consuming. Therefore the aim of this study is to demonstrate the impact of EBP on daily nursing and allied health practice.

AIMS. The aim of the study is to gain insight into the impact of EBP on daily nursing and allied health practice.

METHODS. For this study factsheets submitted in the period January 2019 - December 2022 at the Martini Hospital Groningen were analysed. The factsheets were analysed for 8 items, including cost savings, time savings, and improvement in quality of care. The authors independently looked at these items and rated the factsheets accordingly. Differences were resolved through discussion. Distinction was made between nursing and paramedic factsheets. Additionally the authors of the factsheets were asked per email if and how the results were implemented in practice.

RESULTS. A total of 86 factsheets were delivered from January 2019 to December 2022. Of these factsheets, a total of 12 have been published in professional journals: 10 nursing factsheets and 1 paramedical factsheet in "Nursing" and 1 paramedical factsheet in "Longkruid". Recently, 3 of the factsheets published in Nursing have also been included in the Amsterdam University Medical Centre biennial CAT booklet. All the factsheets (100% (n=86)) have led or may lead to a quality improvement to a greater or lesser extent when rated by the authors. A total of 41% (n=35) of the factsheets can lead or have already led to cost savings, 28 of them in the nursing field and 7 in the paramedical field. And in addition to cost savings, 32 factsheets written by nurses and 5 fact sheets written by paramedics yielded time savings in daily work according to the author rating. In 56% (n=48) of the factsheets, follow-up research is strongly recommended because there is too little or no research findable on the topic of the factsheets. Looking at the responses of the authors of the factsheets, 26% (n=22) of the factsheets were implemented in health practice. The number of topics was very broad. Most of the clinical uncertainties where about IV/PICC, urinary catheters, monitoring vital signs, interventions regarding medical imaging techniques and infection prevention. Earlier research by nursing students showed that management and staff in our hospital feel the urge of using EBP, but allocated time is lacking to use EBP and implement the results in daily practice.

LIMITS. A substantial amount of factsheets were written during the covid pandemic. This may have led to problems with dissemination and implementation of EBP results. The increasing staff shortage has also affected the implementation of the results. And finally, looking at how the healthcare system in the Netherlands is organized, this may also have an impact on implementation: cost savings may lead to reduction in hospital budget from health insurance companies.

CONCLUSIONS. This study shows that research dissemination and implementation is a very important step for EBP in health care. Results of EBP factsheets are beneficial on quality improvement, time saving and costs. This study also revealed that more research is needed into the aforementioned clinical uncertainties. EBP is hypothesis generating for scientific research by healthcare professionals. More specified time, facilitated by management, is needed to apply and implement EBP outcomes. It has to be clear who's responsibility it is to implement findings into practice. When no one is or feels responsible, there will be no implementation. This calls for strong leadership.

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11. Implementation and evaluation of a new quality and patient safety module component across ten postgraduate nursing programmes: Case study from the Irish context

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BACKGROUND. Evidence for quality and patient safety is constantly evolving in healthcare and alongside the introduction of new national policies and frameworks, aligning multiple graduate programmes for consistency in learning can be a challenge. Making changes across multiple programmes simultaneously (10 taught graduate programmes (approx. 150 students) was central to this project's implementation. Ensuring the content's relevance to students' practice and employing a group-based learning approach was considered key to embed across programme curricula the primary learning concepts around collaboration to drive improvement and positive quality and patient safety (QPS) change.

AIMS. This project sought to update the graduate taught Clinical Practicum module (across 10 different qualification programmes in one University) to align to contemporary knowledge and best practice in QPS, and to align to national policy and procedures for QPS practice.

METHODS. Through a process of on-going consultation with colleagues, we collaboratively shaped and designed an approach to implementing the new programme. An evaluation study (pre/post-survey) is currently underway to assess the impact of these changes on students' perceptions of workplace safety culture, psychological safety, their observation and reporting of patient safety incidents and their learning gains on the topic.

RESULTS. The revised content aligns with current knowledge, theories, and approaches to understanding and managing quality and safety in healthcare. Two new lectures were developed and recorded for students to engage with in their own time. Following this, students worked together to play a discussion-based serious game 'PlayDecide Patient Safety' that has been co-designed by UCD researchers, healthcare professionals, patients and members of the public (www.patientsafetydiscussions.ie). PlayDecide Patient Safety has been designed to act as a participatory embedded learning tool to help develop and support professionalism and a culture of openness in relation to patient safety and incident reporting. The evaluation of this teaching innovation is currently in progress. Results will be available by May 2023 and will be presented to reflect on the impact of this new QPS component on student learning.

LIMITS. There was no evaluation conducted related to the previous QPS content and therefore no comparison is available. Student participation in the research and evaluation component is voluntary and therefore only a sample of those students who undertook the training engaged in the survey.

CONCLUSIONS. It is intended that through this module content, students will recognise the significance of culture as the product of individual and group values, attitudes, competencies, and behaviours that form a strong foundation for building a learning system to drive high quality and safe care delivery. The use of serious games is a practical way to enhance engagement and learning and promote open discussion on sensitive or difficult topics.

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12. Perceived Value and Self-Reported Implementation of Teaching Evidence-Based Dentistry (EBD) in Indonesian Dental Schools: A National Survey

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BACKGROUND. The successful integration of evidence-based health care (EBHC) throughout the curriculum requires faculty support. Our focus on using the EBHC protocol was in an Indonesian dental education setting, which is more commonly known as evidence-based dentistry (EBD). Although there is a growing attention to EBD among dentists in Indonesia, teaching dental students the necessary skills to EBD seems to be behind, as in many other developing countries. Indonesia has 32 private and public dental schools spread across its archipelago. Dental schools are the institutions that have a potential contribution to such an intervention in promoting evidence literacy in dentistry through EBD teaching. Institutionalizing EBD in schools requires consistent policy and resource support from school leaders. However, the actual perception of the educational leaders about teaching EBD and the status of implementation are unknown.

AIMS. In our study we aim to explore in the current situation regarding EBD teaching in Indonesia, this study describes the perceived value of EBD among dental school deans with the implementation of EBD teaching in their curriculums and their need for improvement. In order to further support and promote the teaching of EBD in Indonesia.

METHODS. The study was conducted as a non-experimental descriptive study contains two surveys and a document analysis. The first survey was aimed at all the deans of Indonesian dental schools for their perception regarding the importance of teaching EBP and the need for improvement. The second survey targets the vice deans and heads of programs about how EBP is being taught and assessed, and which challenges they encounter with the necessity for improvement as well. For this study, a validated questionnaire from Gorgon et al (2013) has been modified. Both questionnaires contain open and closed items and are written in the Bahasa Indonesian language. The third study is a qualitative analysis of curriculum and policy documents. The 32 dental education providers institutions in Indonesia met the criteria (n=32). Any institution that conducted a dental curriculum program at the bachelor and clinical level and already has graduates was the inclusion criteria.

RESULTS. From the first questionnaire, there were 31 responses from the leaders of the institution (96.8%). The responses were collected from 16 public and 15 private dental schools. The locations were spread out on several of the largest islands in the country, but mainly in Java and Sumatera. The second questionnaire as a follow-up survey to the curriculum teams has 90.63% (29/32) response rate, which were collected from 14 public and 15 private institutions. The importance of EBD skills to be acquired and practiced by students as future dentist was perceived as important (38.7%;12/31) and very important or essential (61.3%; 19/31). The leaders also perceived the importance of incorporating integrated EBD teaching into the curriculum as important (48.4%; 15/31) and as very important or essential (51.6%; 16/31). In response to the next question regarding their perception of implementation experiences in teaching EBD at their own institution, 64.5% (20/31) perceived that improvements are required and 19.4% (6/31) as very necessary. Their curriculum teams also reported considerably quite comprehensive coverage of EBD-specific content that is being taught in the preclinical level, but lower in the fourth and fifth step of EBD (apply and assess). On the contrary, the coverage of the content of EBD at the clinical level was significantly lower on the first three-step (ask; acquire; and appraise), but higher on the last two steps topic. Regarding resources such as teacher-related resources and reference access, most of the respondents perceived that improvement was needed. Most institutions do not have formal EBD training teachers (21 institutions). Although one public institution reported that they have 30 teachers with formal training. But other institutions have very limited numbers, ranging from 1-6 teachers (7 institutions). Most of the respondents (75,9%; 22/29) also considered faculty development as priority action plan.

LIMITS. The implementation of teaching EBD was based on the self-acclaimed report of curriculum teams regarding the level of implementation on teaching EBD at their institution. Furthermore, the retrieved curriculum documents were not adequate

to confirm the self-acclaimed EBD specific topics coverage in the actual teaching implementation, due to the majority of the documents that were analyzed only reveal the macro curriculum contents.

CONCLUSIONS. The outcome of this study could be used as a justification for future interventions to further promote the teaching of EBD in Indonesia. Faculty development program was considered as one of the top priorities among other things. The national scale of interventions in a developing country like Indonesia would require some best practice approach and strategy from similar setting, if available.

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13. Dead on arrival? An overview of living systematic reviews and their methodological rigor.

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BACKGROUND. Health research publications have been increasing at a rapid rate such that a typical systematic review may be out of date by the time it is published. A potential solution to this problem is the living systematic review (LSR), where literature is incorporated on a continual basis for high-priority topics with great uncertainty and where new evidence is rapidly emerging. LSRs have grown by fits and starts over the years but were not widely adopted until the COVID-19 pandemic ramped up the need for timely updated evidence synthesis. Suddenly, a myriad of reviews claimed to be 'living'. But adoption outpaced guidance, leaving little idea of what 'living' looked like in practice vs. theory.

AIMS. We conducted an overview of LSRs to evaluate the extent and nature of current LSRs, as well as the degree to which they acknowledge and adhere to available guidance. As the only published guidance we have found specific to LSRs was created by Cochrane, Cochrane LSRs were compared to non-Cochrane LSRs. We also sought to evaluate methodological and reporting quality to inform future best practice.

METHODS. We found all 'living' Cochrane reviews as of June 2022 using the Cochrane Database of Systematic Reviews. We then searched Embase, Epistemonikos, MEDLINE, PROSPERO, Scopus, and TRIPdatabase (Pro) for published non-Cochrane LSRs addressing a medical or health-related question. For both Cochrane and non-Cochrane reviews, the term living (or a synonym) must have been specified in the title or abstract for inclusion. After eligible Cochrane LSRs were screened for inclusion, we randomly selected an equal number of eligible non-Cochrane LSRs for comparative analysis. Reviews that identified themselves as 'living' were included, regardless of whether or not a living approach was adhered to. We only assessed and extracted data from the most recent versions of included LSRs, based on items included in the Cochrane LSR guidance.

RESULTS. We included 23 Cochrane LSRs and found 118 eligible non-Cochrane LSRs; we randomly selected 23 for comparative assessment with Cochrane LSRs. The publication dates for Cochrane LSRs ranged from September 2017 to May 2022; 13 mentioned Covid-19 or SARS-CoV-2 in the title. Of the 118 non-Cochrane LSRs, publication dates ranged from April 2016 to July 2022; 89 included Covid-19 or SARS-CoV-2 in the title. Unsurprisingly, Cochrane LSRs were more likely to adhere to existing LSR guidance compared with non-Cochrane LSRs. Not all Cochrane LSRs, however, followed or even referenced this guidance. Use of the term 'living' to refer to systematic reviews was inconsistent in non-Cochrane reviews, and some non-Cochrane reviews did not meet any other guidance parameters for being living other than self-identifying as 'living'. Cochrane LSRs had an average of 2.6 updates before they were either transitioned out of living mode or no further updates were published. In comparison, non-Cochrane reviews had an average of 1.4 published updates. Cochrane reviews were more likely than non-Cochrane reviews to be used or planned to be used in policy or guidelines. Results are preliminary; final results will be available by the conference start of 25 October 2023.

LIMITS. The living term applied to systematic reviews has yet to gain a strong foothold, therefore some reviews that may meet the criteria of an LSR may have been missed if the review did not self-identify as living (or synonym). Additionally, studies that identify as a meta-analysis without a systematic review component were not included in this overview, though some authors may not distinguish between a meta-analysis and systematic review. Reviews with updates that were transitioned out of living mode or no longer used the term 'living' in their title or abstract would have been missed in the search and/or excluded at screening. Additionally, in cases where reviews did not include a link to the most recent update, data from that most recent version would not have been extracted.

CONCLUSIONS. Although Cochrane reviews mostly followed Cochrane's guidance for LSRs, for non-Cochrane LSRs, awareness and adherence to this same guidance for best methodological practices was poor. In some cases, it appeared that

authors included the term 'living' as a buzzword, without an established plan for conducting, maintaining, and reporting a living review. Stating a review is living when it is not has many potentially significant consequences, including wasted time, resources, and extraneous publications. It may shift focus, staffing, and funding away from topics that more fittingly meet the need for LSRs. While we recognize efforts to evolve the living concept, there remains a lack of consistency and understanding on how best to operationalize the approach. Guidance for enacting a living approach could be improved by providing less subjective standards. We plan to survey groups involved in living evidence syntheses to better determine these standards as well as facilitators and barriers to enacting a living approach.

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14. Medsyntax: a new, free and open source tool for improved literature research

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BACKGROUND. Creating a search query for medical databases can be a difficult task for people conducting literature search. They may struggle to understand how the syntax operates in different databases. They may not be familiar with boolean operators to combine search terms or how to use parentheses to group search terms. According to a study by Salvador-Oliva´n, 92.7% of the included systematic reviews in PubMed contain errors in the search strategies that impact the quality and validity of the studies (Salvador-Oliva´n, Marco-Cuenca, & Arquero-Avile´s, 2019). The Martini Hospital Groningen offers courses on how to conduct a literature search for Evidence Based Practice (EBP). These courses help participants combine their work with the latest scientific research. EBP, when carried out properly, improves patient outcome and improves overall job satisfaction (O'Shea & Fischer-Cartlidge, 2020). Our experience is that the process of creating a search query is time consuming and difficult. It is often unclear to participants why the search query does not provide them with the right results. Which leads to frustration. Software developers may run into similar problems, but to help them they use a syntax highlighter. A syntax highlighter is a software tool or feature that displays the source code of a computer program or script in a visually distinctive manner. It works by applying different colors and fonts to the various elements of the source code, such as keywords, comments, strings, variables, and functions, making it easier to read and understand.

AIMS. Our aim is to offer a visual, free, open source, didactic tool that helps teachers, students, researchers and other users with quickly creating search queries and to offer them a better understanding of the syntax of search queries.

METHODS. The tool we created is called Medsyntax. Medsyntax is a JavaScript program which transforms every part of a search query into distinct HTML elements with distinct CSS styling for relevant elements. It uses regular expressions (RegEx) and uses simple string matching. Medsyntax works in real-time: if the user edits a search query the changes are immediately visualized. After the transformation to HTML, every search term, every boolean operator, every bracket is an element in itself. Due to the nature of HTML, elements can also be nested. For example: the search terms between brackets are nested as child elements of the combined opening and closing bracket element. MS uses this feature to clearly visualize the nesting of different clusters of synonyms. Real-time detection of errors is done using string analysis on the input string and using JavaScript on the HTML output. The latter creates possibilities for easily programming additional error checks that would be difficult to do on the string input. MS is database specific, though it can easily be adapted to different search engines. It currently works with the syntax of PubMed, Embase and CINAHL. Adaptation to other databases is done by changing the RegEx matchers to the syntax of the target search query syntax. For example by detecting "&" instead of, or in addition to, "AND". A second tool that we created is called Medsyntax PICO. It is based on the same code as Medsyntax, but has additional fields according to the PICO format. The user describes the population, intervention, control or the outcome. The tool visualizes what part of the string, goes with what PICO letter and displays the query real-time.

RESULTS. Both tools are used during our EBP courses with healthcare professionals from the Martini Hospital. The responses are overwhelmingly positive. When the query is giving an error message the users can correct the mistake themselves. People can detect not only the errors, but it also helps them see what they are searching. The separation of the query into a PICO format helps people get a better understanding how a query works and makes the translation from a PICO to a search easier.

LIMITS. The main limitation is that the experiences with the tool are anecdotal and not yet quantitative. The additional functionalities of the tool need to be based on user needs. Furthermore, the only databases compatible with the tool are PubMed, CINAHL and Embase. However: it is easy to convert this tool for use with other databases. Our goal for the future is to create a free tool that makes it easier to conduct literature search for everyone in every database that uses boolean logic.

CONCLUSIONS. Creating search queries can be quite difficult, users might not be familiar with the syntax. Medsyntax helps users to detect errors in their own search strategy and to visualize the search in a meaningful way. The second tool, Medsyntax PICO, can be used by participants who want to learn EBP using the PICO format. Both tools are promising and seem very useful to teach people how to conduct literature search.

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15. Learning on the job: Using Artificial Intelligence and Natural Language Processing to support rapid review methods

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BACKGROUND. The National Collaborating Centre for Methods and Tools' (NCCMT) Rapid Evidence Service responds to the needs of public health decision-makers by answering priority questions using rapid review methods. The Rapid Evidence Service was initially created to address questions related to the COVID-19 pandemic but has since expanded to address any public health-related questions. The vast quantity of literature available for many review questions makes it challenging to identify relevant research using manual title and abstract screening under rapid review timelines. To overcome this challenge, the NCCMT has integrated Artificial Intelligence (AI) into its processes to support screening for rapid reviews.

AIMS. The primary objective of this project is to describe the NCCMT's process of leveraging the existing AI features integrated within DistillerSR systematic review software to develop a sensitive AI screening process that can be used across rapid reviews on varying public health topics.

METHODS. Four AI features offered by DistillerSR have been integrated into our screening methods: DAISY Rank, which uses Natural Language Processing to learn manual screening patterns and apply those to the remaining references to be screened, thereby predicting which studies will be most relevant, Re-Rank Report, which predicts the total number of included studies based on previous screening patterns; AI Screening, which automatically screens studies based on prediction scores; and Check for Screening Errors, which identifies studies that were potentially falsely excluded.

RESULTS. The NCCMT's Rapid Evidence Service has used DAISY Rank on 30 rapid reviews on 18 topics, allowing full-text screening and data extraction to proceed earlier by quickly identifying the most relevant studies. The Re-Rank Report and Check for Screening Errors functions provide an additional layer of screening for potentially relevant studies, minimizing the risk of inappropriately excluding studies. These features have informed decisions to move to use AI Screening. We have integrated AI Screening into five rapid reviews, including three living reviews. In one rapid review update, AI Screening automatically excluded 5,744 of 7,196 studies, thus saving substantial time in the manual title and abstract screening.

LIMITS. Integrating AI screening methods into rapid review timelines means there is often very little time to validate AI through multiple rounds of testing. Instead, we rely on and apply knowledge of AI strengths and limitations gained over many reviews. In addition, although DistillerSR includes the option to apply AI training from one project across multiple projects using custom classifiers, the varying topics and inclusion criteria for Rapid Evidence Service reviews have meant that we cannot use this feature and instead have to re-train AI for each new review. The resources required to re-train AI for each new rapid review are time-consuming and burdensome for a small organization with rapid timelines.

CONCLUSIONS. Integrating AI into rapid review methods has saved time on manual screening, allowing reviews to progress faster and for staff to be reallocated to other tasks. Our methods are transferable across most Rapid Evidence Service topics.

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16. Vaccine communication training for healthcare providers - an IMMUNION initiative

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BACKGROUND. Healthcare providers (HCP) are the most trusted source for information about vaccines. Their communication about the evidence on vaccines can thus influence vaccine uptake and contribute to public health. Therefore, it is crucial to find good methods to train HCPs on evidence-based communication guidelines.

AIMS. Through a project focusing on vaccine education and training of (future) HCPs, we wanted to implement and evaluate initiatives to translate evidence-based communication guidelines to HCPs, so that they feel more confident to communicate about the evidence on vaccines to their patients.

METHODS. IMMUNION is a project (2021-2023) co-funded by the EU, with the goal to strengthen collaboration between HCPs and other stakeholders to communicate about vaccination and increase vaccine confidence/uptake. The co-chairs of the Coalition for Vaccination (CfV) are key partners in IMMUNION. WP5, led by the University of Antwerp, is focusing on vaccine education and training of (future) HCP.

RESULTS. Based on an all-inclusive vaccinology curriculum, created for pre- and in-service HCP, within a cross-project effort (incl. the EU Joint Action on Vaccination), we have organized a general Train the Trainers session on vaccine hesitancy and communication about vaccines, translating evidence-based communication guidelines to the participants. The target audience for the training were teachers who were training any type of (future) HCP that is or will be involved in the vaccination process (nurses, midwives, pharmacists, general practitioners, pediatricians...) on the topic of vaccination, from all EU member states. The session served as the basis for specific country sessions, that were organised in the native language and tailored to the needs of local HCPs (pilot in Greece, Latvia, Romania). The target audience for these trainings were local trainers of HCPs, who later carried on the training cascade to HCPs. The intended final goal was to improve confidence and communication skills of HCPs to engage in conversations about vaccines and their evidence with their patients. Both the general train the trainers session and the country sessions proved to be effective in increasing HCPs' communication confidence about vaccination. Moreover, the methodology of a general train the trainer session and subsequent country sessions, tailored to the local context, was evaluated positively by the participants. Besides training of HCPs, we also advocated for vaccinology by organizing side sessions on vaccine confidence and communication at international events of health associations (CPME, CED, EPSA). This way, we wanted to bring attention to vaccinology to HCPs, also those who are not dealing with vaccination on a regular basis. These sessions were also evaluated positively by the participants. The outcomes of both initiatives are publicly available on the CfV website (coalitionforvaccination.com).

LIMITS. These initiatives were rolled out in a small number of selected countries and during selected events. However, the methodology of organizing a general train the trainer session and then adapting the session to a local context during a country session, seems promising for implementation in other countries as well.

CONCLUSIONS. The initiatives taken in the context of IMMUNION to improve communication confidence of HCPs by providing them with evidence-based communication guidelines, were evaluated positively. These initiatives may form an inspiration for how to train HCPs on communicating on the evidence about vaccines with patients.

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17. When seemingly essential methods don't hold up in a pandemic: an adaptive approach to a living, rapid review on the SARS-CoV-2 antibody response

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BACKGROUND. In July 2020 we were asked to produce a living, rapid review on the SARS-CoV-2 antibody response. When we looked around, we found that the COVID-19 evidence landscape was littered with "living" reviews that were already dead-- undertaken with good intentions, but without the resources, resolve, or relevance to update them. Many were also overstuffed with low-quality and minimally informative studies that were no longer relevant to the most pressing questions of the rapidly evolving pandemic. Seeing an opportunity and necessity to break from the crowd, we pursued an alternative review approach that we called "Systematic Without all the Hassle" (a "SWATH" review) knowing that our approach may or may not be embraced by the evidence synthesis community.

AIMS. To describe our novel "SWATH" approach to conducting a systematic, living, rapid review on the SARS-CoV-2 antibody response.

METHODS. We developed the original protocol in coordination with the American College of Physicians and the Agency for Healthcare Research and Quality, which commissioned a living, rapid review of evidence on the SARS-CoV-2 antibody response, with planned updates as new evidence became available. Recognizing that the key questions for this review were likely to change as the pandemic evolved, we wrote a protocol that allowed us to take a pragmatic, adaptive approach to searching, study selection, and synthesis when needed to keep pace with emerging clinical questions related to the review's overall aim.

RESULTS. We produced an original report in June 2021 and two updates over the subsequent 18 months. The original report was focused on describing the SARS-CoV-2 antibody response and the prevalence of detectable antibodies over time. As the literature matured, we narrowed the scope and the eligibility criteria of our first update to focus on relatively high-quality cohort studies of the protection against reinfection after SARS-CoV-2 infection. Our second update attempted to merge these topics together by synthesizing evidence on the duration of the antibody response and protection against reinfection with SARS-CoV-2 variants. While planning the updates, we considered protocol changes that would address the evolving variant and vaccination landscape that rendered the original question obsolete. Rather than retire our review, we amended the protocol to exclude types of studies that had proven uninformative and weighed whether changes would introduce or reduce bias. Specifically, our initial protocol was based on our understanding of the SARS-COV-2 antibody response at the time and was likely biased by our limited knowledge of what to expect early in the pandemic. We embraced a protocol change and posited that the default view of systematic reviewers should not be that an unchanged protocol is less biased than a changed protocol. Had we not modified our protocol, we could have also introduced bias by being too attached to our initial ideas. Leaning into our pragmatic, adaptive approach, we: 1) dropped questions if a previous version answered them definitively; 2) delayed answering questions if the literature at the time was unlikely to provide a valid answer; and 3) added or refined questions based on new medical knowledge or changes in perceived evidence gaps. Applying a commonsense approach, we adapted our study selection processes in updates 1-2 to account for improving quality of the evidence base, rejecting our initial decision to include all studies regardless of study design and indirectness. We prioritized including studies of good quality that were best designed to answer our key questions. Rather than feel weighed down by our initial protocol, crafted more than 2 years before our final update, we embraced the need to evolve. Even the meaning of our review catchphrase, "SWATH", seemed to change week-to-week: from "Systematic Without All the Hassle", to "Strategic Without All the Hassle", to "Systematic With All the Headaches", to, finally, referring to the "SWATH" of new studies we expected to be published from the high-quality, longitudinal cohorts we were following.

LIMITS. The investigators' enthusiasm for innovation may have led them to overestimate the significance of a single case study.

CONCLUSIONS. Riding the waves of literature in an evolving pandemic is a new challenge in the field of evidence synthesis. Novel approaches to conducting living reviews in the setting of a public health emergency require flexibility to address the question most relevant to decision-makers and transparency in weighing whether changes between updates would introduce or reduce bias.

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18. Processes and methods for developing guidance in the setting of COVID-19: an international, cross-sectional study

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BACKGROUND. In a rapidly evolving public health emergency, guideline developers must provide credible, valid, and up-to-date guidance that meets end-users' needs. In the face of extraordinary challenges in response to the COVID-19 pandemic, including urgency and scarce evidence, guidance-producing organizations devised processes and methods for rapidly synthesizing evidence and developing guidance.

AIMS. To describe and compare the processes, methods, tools, and platforms used by organizations to develop and publish guidance in response to the COVID-19 pandemic, and to summarize key informants' views on the advantages and disadvantages of various approaches and on lessons learned.

METHODS. We examined the processes and methods for guidance development in COVID-19 across select organizations situated in high-income countries. Using a pre-defined template, we extracted data from guidance documents, organization websites, and journal publications: characteristics of the organization, processes and methods for prioritizing guidance topics, identification of evidence, evidence synthesis methods, contributors, formation of recommendations, tools used, quality assurance mechanisms, and publication platforms. Fields were binary yes/no, multiple choice, or free text. For data not available in the public domain, we conducted semi-structured interviews with representatives from each organization. Data were extracted by a single reviewer and checked by a second reviewer, and a summary table and narrative summary for each organization's approach was developed. Tables and summaries were sent to interviewees for verification and clarification.

RESULTS. Nine organizations were included in our sample: Australia National Clinical Evidence Taskforce; Australia Department of Health and Aged Care; Public Health Agency of Canada; College of Public Health Medicine, South Africa; Association of the Scientific Medical Societies, Germany; UK National Institute for Health and Care Excellence (NICE); US Centers for Disease Control and Prevention (US CDC); Pan American Health Organization (PAHO), and the World Health Organization (WHO). Semi-structured interviews were conducted with 19 interviewees across all nine organizations. While each organization had a unique approach, there were significant commonalities with respect to processes and methods used, as well as successes and challenges. All organizations made significant efforts to ensure that guidance was developed and published free from any political interference, except for US CDC. Six organizations used standardized processes and methods for developing guidance, including use of systematic evidence reviews and/or an explicit evidence-to-decision framework. Organizations most successful in producing COVID-19 guidance had a strong, pre-existing workforce and infrastructure for developing and updating standard guidelines in the non-emergency setting and were able to quickly pivot staff, technology, and resources to developing emergency guidance. Coordinating guidance was challenging for large organizations with numerous technical units, such as WHO and CDC. All organizations acknowledged significant challenges in keeping recommendations and publications up-to-date and logically organized on websites to meet a range of end-users' needs. Although resource intensive, four organizations (Australia National Clinical Evidence Taskforce, NICE, WHO, and PAHO) had exemplary living review and guideline models for clinical recommendations. Several interviewees noted the importance of cross-organizational and cross-national collaboration; however, few productive collaborations occurred.

LIMITS. We used a convenience sample of exemplary organizations from high-income countries; it is possible that there are organizations that used effective or novel approaches for evidence synthesis and guideline development that we are not aware of. Due to resource and time constraints, we interviewed a small number of individuals. Thus, important perspectives and approaches may have been missed. However, due to our existing networks, we likely interviewed many of the key players and organizations and we noted recurrent themes.

CONCLUSIONS. There are variations in processes and methods for developing guidance in the emergency context across key organizations situated in high-income countries; however, there are also significant commonalities. Organizations that were most successful had a strong, pre-existing workforce and infrastructure for producing and updating standard guidelines, and were able to pivot to producing guidance urgently. Independence from political interference, transparency, and explicit links to the best available evidence were highly valued by organizations. Attention should be given to sharing knowledge and lessons learned, and in ensuring that countries and organizations have the relevant expertise and capacity to provide high-quality, impactful guidance in the next public health emergency.

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19. Vitamin D for prevention and treatment of COVID-19. Transformation of a rapid review in a living systematic review

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BACKGROUND. In the evidence review during the pandemic was necessary to discern between interventions that could have a positive risk-benefit balance and those that could represent more risk than benefit, even, in some cases, more dangerous than SARS-CoV-2 into a chaotic scenario of emerging infectious disease. The challenging situation was to find rapid answers while maintaining a rigorous methodology. Collaborative efforts to find the better solutions in the fastest manner, promoted that editors and information producers published the majority of their works as accessible, findable and reusable. The determinant elements were a huge number of publications, which surpassed the capacity of reviewers, the poor quality of studies and the necessity to provide reliable evidence to decision makers and health professionals.

AIMS. To describe a rapid systematic review approach to assess whether vitamin D could have a favourable benefit/risk balance for prevention of severe COVID-19 and/or treatment of the disease. To contextualize the answer inside the health care crisis, adapting the rapid review in a living systematic review.

METHODS. In the first stage, we followed the methodology propose for Cochrane Collaboration Guidance from the Cochrane Rapid Reviews Methods Group. To identify clinical practice guidelines, systematic reviews, published preprint and ongoing studies, based on PICO question, we developed search strategies in the main databases (Medline, Embase, WOS, Cochrane Library, Epistemonikos, etc) and other evidence resources (International HTA database-INAHTA, other HTA agencies, COVID-END and COVID-NMA INITIATIVE). The selection criteria were revised in the following versions. We assessed the risk of most important bias following the recommendations of the Cochrane manual for systematic reviews 2019. The recommendations of the PRISMA statement were progressively incorporated and we followed the characteristics of a living systematic review from to the six version in 2020 November, following the methods described in living systematic reviews Cochrane published and Australian Living guidelines for the clinical care of people with COVID-19. To identify new evidence that was anticipated to emerged, we planned frequency of surveillance assessing the available resources. The rules in successive versions of report were to highlight the new text added, and to specify the withdrawn of obsolete or irrelevant studies due to new publications of better quality. Specific preprints sources were removed from the searchable sources list.

RESULTS. A first rapid review of the literature was carried out in April 2020. From that point, we developed a systematic and structured search from September 2020, continuing today. In the first 6 versions were established a weekly update, every 15 days until version 12, and monthly until December 2021. From that date, we assessed the frequency of the update in each report, until the actual version. Search strategy has been updated or modified continuously not just for date but terminology and controlled terms normalization. Periodic searches of evidence in databases in conjunction with alerts in LOVE platform and COVID-19 Evidence Alerts for new evidence surveillance were applied. Evidence profiles with GRADE Pro software were completed, determining when to incorporate new evidence. A narrative summary and summary of findings was performed to inform to decision maker (our petitioner).

LIMITS. At the initial stage of the review, poor evidence quality studies were included in the report. Peer review of the literature was not possible. High heterogeneity was detected in population and intervention, prevented from pooling the outcomes.

CONCLUSIONS. The methods for evidence review about COVID-19 was adapted to pandemic evolution progressing from rapid review in critical context to continuous review when the answer fulfilled the requirements of a living review. As we started learning with the Ebola crisis, sharing data and information was essential to generate knowledge, and we all are responsible for returning our findings to the community. Experience gained during the COVID-19 pandemic should help to

establish needed basements to be ready for other exceptional situations that could appear in the future. It should include efficient manners to improve transfer and knowledge management, to optimize resources, and facilitate better decisions making on health interventions.

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20. Impact of pragmatic trial design features on treatment effect estimates: the PragMeta project

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BACKGROUND. It is frequently said that there is a continuum between pragmatic and explanatory trials. However, can we really say that the more pragmatic a trial is, the less explanatory it is and vice versa? Pragmatic trials provide decision-oriented, real-world evidence. It is also assumed that effects in the "real-world" (and thus pragmatic trials) are different to effects obtained under artificial, controlled, research conditions (and thus explanatory trials). However, what features of pragmatism, generalizability, and applicability are responsible for such difference? The hype around pragmatic trials and real world evidence is very current and yet the concepts are not new.

AIMS. The PragMeta project aims to provide a database to catalyze meta-research of pragmatic trials.

METHODS. We built a public database (www.PragMeta.org) to collect relevant data from trials with identical clinical questions (i.e., on population, intervention, comparator, and outcome) but having different aspects of generalizability, applicability, and pragmatism. We identify trials that are self-labelled as or have prominent features of being pragmatic (e.g., use of routinely collected data) and then used forward citation to identify citing systematic reviews including corresponding trials on the same research question. By using the PRagmatic Explanatory Continuum Indicator Summary tool (PRECIS-2), we assess the degree of pragmatism and then its impact on treatment estimates. The PragMeta database covers published trials of various topics that focus on specific therapeutic areas (e.g., multiple sclerosis), outcomes (e.g., patient-reported outcomes), or specific trial features (e.g., use of routinely collected data); among others. We invite other groups to collaborate, contribute, and/or use the PragMeta database.

RESULTS. At the conference, the status of PragMeta will be summarized and use cases of the database presented to illustrate its potential for meta-research on pragmatic evidence.

LIMITS. Not applicable

CONCLUSIONS. Our results will inform a better understanding of the conceptualization of the pragmatic-explanatory continuum, if any, and the generation and interpretation of real-world evidence. It will give practical guidance for all stakeholders developing, funding, conducting, assessing, or otherwise using clinical trials. Ultimately it may help to generate, report, and use evidence that is more relevant for patients, clinicians, and other key health care decision-makers.

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21. A learning system using routinely collected cohort data to combine research and care for continuous evaluation of personalized treatment strategies: the MultiSCRIPT project

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BACKGROUND. We have initiated the implementation of MultiSCRIPT: personalized medicine in Multiple SClerosis – pRagmatIc Platform Trial embedded within the Swiss MS Cohort (SMSC), merging randomized trial methodology with real-world cohort data collection.

AIMS. We aim to systematically and continuously generate knowledge for better personalized treatment and care strategies in multiple sclerosis, at low cost and with rapid translation to clinical practice. MultiSCRIPT is a learning system with an evolutionary approach of personalized care that cyclically evaluates innovative interventions within a trial infrastructure embedded in an ongoing cohort study.

METHODS. The SMSC was established in 2012, has 8 centers across Switzerland and includes over 1600 participants with MS prospectively recruited (median follow-up time 6.2 years of > 12'000 visits). Every 6 to 12 months, SMSC participants come for standardized evaluations of the disease status (relapses and disability status, blood sampling, and brain or spinal cord magnetic resonance imaging; MRI) within their routine care. We now use this data and care infrastructure for continuous randomized assessments of treatment strategies that we refer to as "cycles" of assessments. The first cycle of MultiSCRIPT will be a comparison of an intensive biomarker monitoring strategy using the serum neurofilament light chain (sNfL) biomarker which is associated with disease activity and is increasingly used as a treatment response marker. Within MultiSCRIPT, we will randomize over 900 participants to compare a novel treatment strategy (6-monthly monitoring of sNfL) versus usual care. The superiority of novel treatment strategies will be determined with two primary outcomes: disease activity (EDA3) and quality of life after 24 months. Secondary outcomes include established clinical outcomes in MS (e.g., relapses, disability worsening, MRI activity), serious adverse events, and economic outcomes. Data collection is fully embedded within the SMSC using established trial-level quality procedures. The novel treatment strategy will be considered superior to usual care if either more patients have no evidence of disease activity, or their health-related quality of life increases. If it is shown to be superior, intensive biomarker monitoring will become the new standard of care, and the next promising strategy will be evaluated in a next learning cycle. Before each cycle, a systematic Delphi process involving international experts and >10% patient consultants will be conducted to optimize clinical implementation of novel treatment strategies. The accumulation of data will enable the continuous generation of new hypotheses on how treatment and care strategies can be further personalized to treat patients as little as possible but as much as necessary at the right time.

RESULTS. The 3 rounds of the Delphi study for the first cycle involved 3 patient consultants, 10 international experts and 18 SMSC experts and were completed in January 2023, generating broad consensus among all SMSC centers to implement common approaches to the use of sNfL information in MS care. The scheduled start of the trial is August 2023. This project is supported by the Swiss National Science Foundation (Investigator Initiated Clinical Trial program). At the conference, we will elaborate on the design and provide an overview of the road to implement such learning system within a nationwide cohort.

LIMITS. Not applicable

CONCLUSIONS. Such learning systems can focus on clinical questions which typically are outside of commercial interests, such as diagnostic strategies and have a key advantage over conventional clinical trials lacking approaches to sustainably and durably use their study environment and data structures.

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22. Evidence to action: the role of issue briefs as a tool for discussion and NCD advocacy in five African countries

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BACKGROUND. The Collaboration for Evidence-based Healthcare and Public Health in Africa (CEBHA+) is a five-year project funded by the German Ministry of Education and Research (BMBF). From 2018-2023 partners from seven African (Uganda, Ethiopia, South Africa, Malawi, Rwanda) and two German institutions collaborated to conduct research on non-communicable diseases (NCDs) and road traffic injuries, with the main aim of translating evidence to policy and practice and building long-term capacity in evidence-informed decision-making (EIDM). EIDM – whether policies, practices, teaching or service – requires sharing evidence in a way that is timely, tailored and relevant to the audience. At the Centre for Evidence-based Health Care, at Stellenbosch University in South Africa, we have been building capacity to write Issue Briefs as a form of Knowledge and Evidence Translation. Issue Briefs are a knowledge translation tool that serve as a bridge between scientific manuscripts and policy briefs. The issue brief is a two-page document tailored to a specific audience and highlights priority actions, key findings and implications linked to the research. Each Issue Brief is targeted to a particular decision maker – at any level – that has the power and interest to action on the recommended solutions.

AIMS. Policy makers, practitioners, students and advocates from around the world have been using Issue Briefs to advocate for change amongst their leaders – including in schools and universities. We aim to share the experience of building capacity in Africa for evidence translation through deliberate stakeholder engagement and concerted integrated knowledge translation strategies for CEBHA+. In particular the experience of using issue briefs as an advocacy and action-compelling tool for NCD interventions.

METHODS. We developed a CEBHA+ branded issue brief template based on Issue Briefs that were originally developed for the SORT-IT program at WHO in 2015 and enhanced for academic courses taught at Stellenbosch University in South Africa. Three dedicated trainings on issue briefs were conducted for the CEBHA+ team in October 2018, March 2020, July 2022. Each training allowed participants to tailor their content to the research that they conducted and the key stakeholders that they engage with and wanted to influence. Individual Ad hoc trainings and support were provided throughout 2018-2023. Follow up on how the Issue Briefs were used and their impact on influencing policy and/or practice was collected through fishbowl and round table meetings with CEBHA+ colleagues at annual meetings. Several cases on how issue briefs were used were recorded and we present these as illustrative examples.

RESULTS. Across CEBHA+, all partners attended the issue brief training and a total of 22 issue briefs were created. Partners in all African CEBHA+ institutions shared these with priority stakeholders in various ways. In South Africa, CEBHA+ partners printed posters of the issue briefs and presented them through a world-café style gallery walk at a policy-dialogue with national and provincial policy makers. This provided an opportunity for engagement and discussions on priority NCD topics and led to important discussions. In Rwanda, CEBHA+ partners met with decision-makers and were able to influence the Ministry of Health to facilitate physical activity policies during Covid-19. Colleagues in Malawi partnered with the Knowledge Translation Unit in the Ministry of Health to embed NCD research into policy and practice decision-making. The Ugandan team used issue briefs to spur police and local road traffic authorities to cater for pedestrians with disabilities.

LIMITS. This paper is a reflection of our experience with and commentary on the value of issue briefs as a knowledge translation tool. A formal evaluation of the issue briefs is planned.

CONCLUSIONS. Issue Briefs are a bridge between research summaries and policy briefs in that they permit the use of systematic reviews as well as primary research to provide evidence, recommendations and implications to compel decision makers – at all levels – to effect change. They are simpler to understand; address a variety of decision-makers at the policy,

practice, organizational and community levels; and provide recommendations with short, medium and long term timelines that permit feasible action. Evidence producers should consider using Issue Briefs as a veritable knowledge translation tool for effecting change in their contexts.

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23. Similar responsiveness of health-related quality of life outcome in patients with breast cancer undergoing systemic therapy

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BACKGROUND. In clinical trials including patients with breast cancer, multiple patients reported outcome measures (PROMs) had been used to assess health-related quality of life (HRQoL), some developed specifically for breast cancer patients, some for cancer patients in general and some for a general population. Extracting and combining these data is essential to any meta-analysis of such trials. Often several PROMs are used in trials for estimating the change in HRQoL. Simply extracting data on the primary outcome may not be an option in a meta-analysis, as this is often not reported. If the choice of PROMs is based on which outcome measure reaches statistical significance, the corresponding meta-analytic estimates will likely be biased. Including PROMs with different responsiveness may increase the heterogeneity of the estimate in meta-analysis. Ideally, the most responsive outcome measure is the best choice for extraction and inclusion in a meta-analysis if it is a valid outcome measure and included in most of the trials. Whether the outcome measure is valid (i.e., measures the intended change) is a separate consideration based on face, content, construct, and criterion validity. Good validity is a prerequisite for high responsiveness.

AIMS. This study aimed to compare the responsiveness of disease specific and generic HRQoL used in randomized controlled trials (RCTs), evaluating exercise interventions in patients with breast cancer undergoing systemic treatment.

METHODS. We searched in MEDLINE, EMBASE, CINAHL and CENTRAL databases for RCTs evaluating exercise interventions in patients with breast cancer undergoing systemic treatment reporting at least two different HRQoL outcomes. Network meta-analysis is a generalization of meta-analysis methods that allows combining direct and indirect comparisons of interventions within individual primary trials. A network meta-analysis using a random effects model (REML) was performed. The effect of the intervention was calculated as the standardized mean difference (SMD) on change in HRQoL. The PROM with the largest SMD is the most responsive. Inconsistency was evaluated on the difference between direct and indirect estimates of responsiveness between the three groups of PROMs, breast cancer-specific, cancer-specific and generic outcomes of HRQoL. Then we calculated the probability of each type of outcome being the most responsive using the summary of the highest SMD. Probability values were summarized and reported as the surface under the cumulative ranking (SUCRA). SUCRA = 1 if a type of outcome consistently ranks first and thereby is considered the most responsive, and 0 if it consistently ranks last and the least responsive.

RESULTS. Twelve studies measured HRQoL with both a breast cancer-specific and cancer-specific outcome; two had both a cancer-specific outcome and a generic HRQoL outcome, and two reported HRQoL outcome in all three outcome groups. The forest plot showed no inconsistency between direct and indirect comparisons, and the network meta-analysis assuming consistency showed no relevant difference in the three comparisons. Breast cancer-specific outcome measures compared with the generic outcome measured reveal an SMD of 0.024 (95% CI, -0.235 to 0.283) and SMD = -0.035 (95% CI, -0.158 to 0.088) when compared with cancer-specific outcomes, respectively. Cancer-specific outcomes compared with generic outcomes revealed an SMD = 0.059 (95% CI, -0.168 to 0.286). The generic PROMs were the most responsive, with 53.9% confidence, followed by the breast cancer-specific with 36.4% confidence.

LIMITS. The main limitation of this study is the low number of included studies with two and more HRQoL measures. Therefore, the PROMs were grouped as breast cancer-specific, cancer-specific and generic instead of performing the analysis on the individual PROMs. Further, there were some variations of the exercise prescription components (frequency, intensity, and duration) and delivery mode (supervised, partly- or unsupervised). However, due to the low number of included studies addressing these differences was not possible.

CONCLUSIONS. There was no clinically or statistically significant difference in responsiveness between the disease-specific and generic HRQoL PROMs in breast cancer patients undergoing systemic treatment. Therefore, the choice of PROMs may not impact the heterogeneity in the meta-analysis of HRQoL in patients with breast cancer undergoing systemic therapy. Consequently, no recommendation on which HRQoL domain to choose for data extraction can be made.

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24. Using Consumer Surveys to Impact the Scope of Clinical Practice Guidelines

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BACKGROUND. Consumer representation and input during the development of clinical practice guidelines helps to ensure that that the very topics or PICO questions addressed are important to patients/consumers as well as clinicians, that patient perspectives are represented in the recommendations and implementation suggestions, and that the writing is clear and devoid of unintentional ableism. Finding consumers who agree to participate in the guideline development process, and who can devote the time to read, edit or question the dense content is a challenge. Even if 2-3 consumers can be identified, there are concerns about how fairly they can represent the broader population of patients with the health condition of interest. Surveys that collect the opinions and relative importance about potential clinical practice guideline (CPG) topics allow for a wider range of opinions and greater confidence that the selected foci are valued by the intended audiences. The American Physical Therapy Association has been promoting CPG development for over a decade. Within two of its specialized academies, 7 CPGs have used surveys to inform the relative importance of topics to a variety of interested parties, ensuring a greater consumer voice.

AIMS. To describe the various approaches, results and lessons learned from using consumer surveys to inform the scope in CPGs.

METHODS. A description of the 7 surveys, including who was studied, response rate, and how it informed topic priorities.

RESULTS. 5 surveys for pediatric CPGs on developmental coordination disorder, idiopathic toe walking, mobility interventions for children with cerebral palsy, selective dorsal rhizotomy, and Down Syndrome, and 2 surveys on core measures for adults with chronic neurological conditions and use of ankle foot orthoses for neurological conditions have impacted decisions on the scope of their respective CPGs. Respondent data from different perspectives or diagnoses (e.g., patients with different chronic neurological conditions) can identify common priorities. Consumer focus groups can augment caregiver survey data when cognition is compromised.

LIMITS. Surveys are reviewed for content validity but are not otherwise psychometrically tested. Snowball recruitment of respondents may influence topic priorities. Consumer recruitment varies by diagnosis or topic.

CONCLUSIONS. Consumer surveys can broaden representation to validate the scope and value of a CPG during its development stage.

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25. The Doctorate of Physical Therapy EBP Curricular Guidelines: Uptake and Challenges

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BACKGROUND. The Doctorate of Physical Therapy EBP Curricular Guideline (EBP-CG) was developed in 2014 as a free monograph for physical therapy faculty and clinical instructors to inform student learning objectives in didactic curricula or clinical experiences. A 2016 companion article described a variety of way to use the EBP-CG. A mixed method study of the uptake of this consensus document and the feasibility of teaching the 33 terminal objectives was published in March 2023.

AIMS. To describe the EBP-CG, its recommended uses, the results of the mixed methods study and the remaining challenges in preparing graduating physical therapists.

METHODS. The 2014 EBP-CG was developed by an expert panel and was based on current literature and the experiences of the panel members. Invitations to complete the survey were sent to all accredited US physical therapy program directors in 2021. They were directed to either complete it or forward it to the primary faculty person teaching EBP content. Respondents could indicate on a separate URL if they were willing to be interviewed.

RESULTS. The EBP-CG has 33 terminal objectives with suggested learning objectives or activities for both didactic course faculty and clinical education instructors. It has been freely available on the American Physical Therapy Association (APTA) Academy of Research EBP Special Interest Group's website since its completion. The 2016 companion article was published in the APTA sponsored education journal and several presentations were made at national APTA conferences to increase awareness between 2014-2016. Faculty representing 83/ 252 accredited programs completed the survey; 14 respondents were interviewed to achieve saturation. All 33 objectives are taught but on average, students are only expected to achieve independent mastery of 7. While faculty confirmed the usefulness of the guideline for informing course content and validating existing course objectives, 4 gaps in educational preparation were identified: faculty awareness of the EBP-CG, use of group over individual projects for student assessment, communication with and expectations of clinical sites, and a lack of consensus on minimum EBP competencies in physical therapy curricula.

LIMITS. The EBP-CG was a consensus document. Only 33% of programs participated in the survey that had no external validation process. Respondents may be biased by their interest in EBP, thus results may not generalize to the remaining educational programs.

CONCLUSIONS. What is taught about EBP differs from what physical therapy students are expected to master prior to graduating. Expectations that students can be change agents to promote EBP during their clinical experiences are inconsistent with the level of mastery expected by the majority of survey respondents. Significant barriers to effectively translate didactic teachings to application in clinical settings need to be addressed to ensure professional competence in EBP.

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26. Using the Master Adaptive Learning Model to Develop Curriculum that Enhances Evidenced-Based Practice

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BACKGROUND. The conceptual framework of the Master Adaptive Learner (MAL) is relatively new, having been detailed by Cutrer et al in 2020. A MAL "utilizes a metacognitive approach to self-regulated learning that leads to the development and demonstration of adaptive expertise," which is essential in the execution of evidence-based health care. However, curricula to develop MALs in postgraduate medical training have not been presented or evaluated. A necessary first step in teaching MALs is a transformation of the learning environment to encourage learners to explore their knowledge gaps openly without fear of retribution or harassment.

AIMS. This presentation will describe the MAL framework, discuss the key features of faculty engagement that enable master-adaptive learners to thrive, appraise a gap analysis of the readiness of two family medicine residency programs' curricula to teach MALs, and detail several curricular elements that have been implemented within those programs to address the identified curricular gaps.

METHODS. Three family physician educators from two residency program encountered the MAL framework in March 2021. A gap analysis was performed to identify pre-existing features within the curricula of the residency programs that encourage the development of MALs and establish areas of need to enhance MAL evolution. This presentation will include the results of the gap analysis, the curricular changes that followed, and a description of the changes in resident-defined goals before and after the modified curriculum was implemented.

RESULTS. The gap analysis identified that one program lacked dedicated time to formally teach the principles of evidence-based health care; that both programs required faculty development about the MAL framework to begin to shift the learning environment to encourage MAL behaviors; and that the process of resident self-assessment and goal setting lacked expectations that the residents create specific goals to develop a measurable individualized education plan. As a result of the gap analysis, one program adopted two new recurring didactic sessions based on a model already enacted by the other residency. Both residencies held faculty development sessions to encourage faculty behaviors that empower MALs. Finally, both residencies also made changes to their learner self-assessment processes to enhance metacognition and highlight behaviors that help MALs to thrive. In both programs, learners produce a semi-annual statement for faculty and senior residents following the completion of a defined informed self-assessment process. The statement is intended to share updates and goals with the faculty community. Following these changes, an increase in the specificity of goals shared in residents' statements occurred.

LIMITS. This presentation is essentially an educational case study of an intervention at two residency programs. As such the results may not be generalizable, and the methods to analyze the intervention are limited and preliminary. However, the concept of training MALs has incredible potential to aid in the practice and teaching of evidence-based health care. Therefore, we believe that the introduction of the MAL framework and this preliminary attempt to enact it in medical education has benefit to the EBHC conference attendees.

CONCLUSIONS. The Master Adaptive Learner (MAL) framework is a useful description of a key component of evidence-based health care. To teach MAL effectively, the learning environment requires considerable revision, which begins with faculty development. The implementation of didactic sessions for learners, informed self-assessment for learners, and development for faculty resulted at two family medicine residencies resulted in the learners demonstrating an increased in MAL behaviors when goal setting.

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27. Knowledge, attitudes, confidence, and behavior related to Evidence-based practice among healthcare professionals working in primary healthcare in Norway. Results from a cross-sectional survey

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BACKGROUND. Implementing Evidence-based practice (EBP) in primary health care is a complex process that may be challenging and slow. Research shows that the implementation of EBP can be hindered by barriers, including organizational-, cultural- or clinician-related factors. At a clinician-related level, lack of EBP competencies, including EBP knowledge, skills, attitudes, self-efficacy, and behavior, can be essential barriers. A better understanding of EBP knowledge, attitudes, behavior, and self-efficacy in healthcare professionals can form the basis for developing strategies for implementing evidence-based healthcare and increase the chance of successful implementation of EBP.

AIMS. 1) To map EBP knowledge, attitudes, behavior, and self-efficacy in different healthcare professionals working with older people in primary care in Norway using the EBP2 questionnaire. 2) Examine the associations between background variables like professional training, level of education, EBP-training, and the scores on the EBP domains.

METHODS. The Norwegian version of the evidence-based practice profile (EBP2) questionnaire will be used in a web-based cross-sectional survey (nettskjema.no). Snowball sampling is being used to recruit participants . Sample: physical therapists, occupational therapists, nurses, assistant nurses, and MDs working with older people in primary care in Norway. The Norwegian Social Science Data Services (NSD) approved the study in March 2022 (ref: 747319). Outcomes: The EBP2 is a fifty-eight items questionnaire measuring EBP-related attitudes, knowledge, behaviors, and confidence/ self-efficacy. Background variables: Age, profession, level of education, years since education, clinical work experience (years), and EBP experience/ training. Statistics: Descriptive statistics with background characteristics will be presented for each subgroup of healthcare professionals and the total sample. Summative scores for each domain will be reported for the total and sub-samples (i.e., different disciplines). In addition, standardized mean scores (0-100) will be calculated. Differences in mean scores on the EBP domains between subgroups of healthcare professionals will be analyzed using ANOVA or t-tests (or non-parametric test if indicated). Associations between sum scores on the different EBP domains (dependent variable) and characteristics like profession, level of education, and EBP experience/ training will be analyzed using multivariate linear regression analysis and adjusted for possible confounders.

RESULTS. Data collection started October 12th, 2022, and will end in June 2023. As of February 2023, 310 have responded to the questionnaire. Results will be presented at the 2023 EBHC conference.

LIMITS. The study's cross-sectional design does not allow us to conclude on causality. Snowball sampling may lead to sample bias, and the results must be interpreted cautiously regarding generalizability.

CONCLUSIONS. This study aims to identify and improve the understanding of factors that can influence the implementation of evidence-based practice (EBP) among different healthcare professionals in a Norwegian primary healthcare setting where fall prevention occurs.

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28. Teaching overdiagnosis to medical students and family physicians within an evidence-based medicine framework

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BACKGROUND. In broad terms, overdiagnosis means making people patients unnecessarily, by identifying problems that were never going to cause harm or by medicalising ordinary life experiences through expanded definitions of diseases. Overdiagnosis has two major causes: overdetection and overdefinition of disease. Overdiagnosis also occurs through the medicalisation of normal life experiences. While overdiagnosis is considered to be a major source of harm and waste in medicine it is rarely addressed in in a robuse manner in undergraduate medical education. Overdiagnosis is to some extent a product of evidence-based medicine while the tools necessary to mitigate the impact of this threat to healthcare system sustainability are also founded in EBM. For example, while some guidelines contribute to overdiagnosis through expanded disease definitions other offer decision support tools that allow providers and patients to engage in shared decision-making through thousand person figure tools as one example. Overdiagnosis is an emerging area of research and advocacy in modern healthcare yet the premise underlying the phenomenon is often counter-intuitice and frequently misunderstood.

AIMS. Overdiagnosis is a challenging concept to impart to healthcare providers, both those in practice and those in training. This session will explore strategies that have been employed to provide first year medical students with the scientific basis for overdiagnosis in a large group teaching session. This includes learning objectives, case scenarios and epidemiologic demonstrations of the phenomenon. The interface between Choosing Wisely initiatives and problems more unique to overdiagnosis will also be highlighted.

METHODS. Thoughtfully developed case scenarios as well as hypothetical but reality-based case studies in screening tests for common cancers were developed and presented to a wide-ranging audience of medical students and physicians in practice on separate occasions. The key objectives of this curriculum centered around an understanding of the drivers of overdiagnosis at multiple levels including cultural dimensions, system level factors, provider level influences and patient and family expectations. Screening for prostate cancer and the downstream consequences of testing both in terms of false positives and overdiagnosis as well as the harms of unnecessary treatments will be used as a prototype for relating key elements of the overdiagnosis problem. Feedback was collected through post-session evaluations including specific comments highlighting both appreciation and skepticism.

RESULTS. Quantitative and qualitative evaluations from students attending sessions on overdiagnosis will be shared and will highlight both the components that were well-received as well as those that were challenged. Many of the common themes highlighted in this feedback focus on the medicolegal drivers of overdiagnosis as well as managing patient expectations when it comes to testing as well as the fear of missing out and not identifying abnormalities that may come to light by seeking medical attention from other providers. Perverse financial incentives and primary care physician workload were also endorsed as drivers of over-testing and as a result overdiagnosis. Creative realignments of health policy and healthcare funding as well as the regulatory and ethical dimensions of limiting the impact of overdiagnosis will also be highlighted.

LIMITS. Overdiagnosis remains largely unknown in many medical specialties. The educational strategies highlighted in this presentation touch on all areas of medicine but resistance exists in acknowledging the widespread nature of the problem in many fields. Unique approaches to elaborate on the harms of overdiagnosis are particularly needed in the realms of psychiatry and cardiology as well as in pediatrics where they are rarely considered.

CONCLUSIONS. While a challenging concept for many to grasp, using an evidence-based medicine framework it is possible to impart a considerable understanding and awareness of the problem of overdiagnosis which is often lacking in

undergraduate and continuing medical education. Novel educational strategies are required to highlight the pervasive nature of overdiagnosis in current medical practice and engaging students and other providers is an essential first step in raising awareness and providing current and future physicians with the strategies to mitigate the harms of overdiagnosis.

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29. Effectiveness of educational interventions for improving information literacy in healthcare professionals: a systematic review

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BACKGROUND. Addressing clinicians' questions about their clinical practice can improve patient care quality, safety, and outcomes. However, clinicians often face challenges, including a lack of confidence in formulating good clinical questions or developing a search strategy to identify relevant medical literature. These skills are known as information literacy skills and are essential to health professions education. However, which educational interventions effectively improve healthcare professionals' information literacy skills is unclear.

AIMS. This systematic review aimed to evaluate the effectiveness of educational interventions for improving information literacy in healthcare professionals. More specifically, it focused on interventions to improve the formulation of answerable clinical questions and to develop an appropriate literature search strategy for healthcare professionals. The impact of information literacy educational interventions on healthcare professionals' knowledge, skills, attitudes, and satisfaction, as well as their clinical practice and patient-related outcomes, were assessed.

METHODS. A systematic review was conducted using the Cochrane methodology and reported according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses statement (PRISMA). The following databases from inception to November 2022: MEDLINE, Cochrane Central Register of Controlled Trials, EMBASE, Web of Science, Cumulative Index of Nursing and Allied Health Literature, and Google scholar, was searched. Randomised controlled trials (RCTs) and crossover trials in any language or duration on educational interventions, including lectures, workshops, small groups, computer-assisted, self-directed, online learning, or bedside education on information literacy in healthcare professionals, were included. Studies on search tools that are no longer available or commonly used, such as electronic textbooks and CD-ROMs, were excluded. The screening was done in two phases. First, a reviewer screened titles and abstracts using ASReview. Two independent reviewers screened the full text for included studies. The screening process using a flowchart as per PRISMA guidelines was described. The data were extracted using a piloted data extraction form. Included studies were assessed using the Cochrane Risk of Bias tool. The findings were synthesised using meta-analysis for the attitude outcome using Cochrane's RevMan 5.4.1 software for data analysis and narrative synthesis where meta-analysis was not possible.

RESULTS. A total of ten studies (1,458 participants) were included in the review —one randomised crossover trial and nine RCTs. These studies mainly compared the effectiveness of lectures and bedside education to lectures or no intervention. There was evidence for improved attitude towards the intervention favouring lecture with self-directed learning intervention over lecture, bedside education, and computer-assisted self-directed learning (RR:1.14; 95%CI 1.06-1.23; N=2 studies; 1,064 participants; I2=0%; moderate certainty evidence). There were limited findings on the outcomes of healthcare professionals' post-intervention knowledge, skill, satisfaction, and behaviour change. None of the included studies reported the number of questions answered, patient-related outcomes, economic cost outcomes, and potential adverse effects. There were also insufficient data to investigate which educational interventions were associated with the most significant improvements in learning outcomes.

LIMITS. The small number of included studies meant that it was not possible to carry out any subgroup analyses or assess the risk of publication bias. Therefore, there is the likelihood of publication bias, and the chances of publication bias cannot be ruled out in this case. This review could have been constrained by the incomplete data and the absence of studies listed under other terms. None of the studies used validated measurement instruments to measure outcomes, making comparing educational interventions between settings challenging. The included studies encompassed a range of participants, including doctors, nurses, allied healthcare professionals, and hospital administration, but there is a lack of consistent methods and studies conducted in any healthcare discipline, making it difficult to draw meaningful conclusion.

CONCLUSIONS. There was a lack of robust evidence evaluating educational interventions improving information literacy in healthcare professionals. The existing studies most commonly assessed the impact of lectures and bedside education included a limited set of outcomes and were poorly reported. The evaluated interventions did not leverage digital technology in delivering educational interventions or as part of the information literacy intervention. Further research should entail well-design RCTs evaluating more novel types of educational and information literacy interventions (i.e., use of webinars and mobile learning), including a broader selection of relevant outcomes.

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30. Impact of Health Library Information Resources on Patient Care: A Cross-Sectional Survey of Irish Healthcare Personnel

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BACKGROUND. We conducted a rapid literature review which showed that there is emerging consensus that mediated access to health library information resources improves the quality and safety of patient care, helps to contain or avoid healthcare-associated costs, and generates time savings for healthcare personnel (HCP). The present questionnaire was designed and distributed as a primary data collection method in order to gain insight into the experience of Irish HCP to set against the international evidence from the results of our rapid literature review.

AIMS. To gain insight into the experience of Irish healthcare personnel (HCP) utilising health library information resources, and to put forward two initial estimates of the economic impact of health library information resources on patient care in the context of the Irish health service: (a) the cost benefit associated with adverse events avoided; and (b) the per minute cost benefit associated with clinicians' time savings.

METHODS. Design: A multi-centre, cross-sectional survey. Setting: Primary, secondary, and tertiary healthcare settings in the Irish public health service. Participants: HCP or students on clinical placement in the Irish public health service. Methods: We distributed a 9-item email questionnaire to registered library users, and via broadcast email to local email distribution lists. The questionnaire attracted 1,278 responses. Separately, we consulted economic data sources to find credible estimates of the costs associated with adverse events and clinicians' time in the Irish health service.

RESULTS. 92% of respondents (n=1176) agreed or strongly agreed that use of library information resources helped to provide better quality of care to patients, and 93% (n=1187) that it led to more confident decisions: more accurate and/or timely diagnosis (n=470), fewer or more appropriate diagnostic tests ordered (n=374), and misdiagnoses prevented (n=296). Respondents stated that information provided by the health library in the past year had led to a reduction in length of stay (n=162), avoidance of hospital admission or re-admission (n=216), or prevention of hospital-acquired infection (n=147), surgery (n=49), patient misunderstanding of a disease or condition (n=590), adverse drug reaction (n=424), or adverse event (n=268). 78% of respondents (n=986) agreed or strongly agreed that use of library information resources saved clinicians' time. We estimate that there is a cost benefit of €1.26million in respect of adverse events avoided in the past year within the survey population; and that there is a cost benefit of ~€0.86 per minute per respondent in respect of those who strongly agreed that use of library information resources saved time.

LIMITS. Strengths • Expands the current evidence base around the impact of health library information resources within the wider health system. • Uses estimates of the costs associated with adverse events avoided and clinicians' time savings to measure the economic impact of health library information resources on patient care. • Argues for a more systematic integration of health library information resources into routine clinical practice. • Provides a survey instrument which is replicable in any comparable health system. Limitations • Includes a greater proportion of active library users in the study than in the general population of healthcare personnel in the Irish health service. • Further studies are needed to better quantify and monetise precise time savings for HCP, and to put forward estimates of the cost benefit associated with quality of patient care outcome measures.

CONCLUSIONS. This multi-site, cross-sectional survey demonstrates significant impact of health library information resources on the quality and safety of patient care, including potential economic impact in respect of adverse events avoided and time savings for HCP. Our study uses reliable, independent data sources to put forward two initial estimates of the economic impact of health library information resources in the context of the Irish health service, and expands the current evidence base around the utilisation of health library information resources within the wider health system. Survey results

should argue for a more systematic integration of health library information resources into routine clinical practice. In the recommendation of the Centre for Evidence-Based Medicine, Oxford University, mediated access to and utilisation of library information resources will result in improved "capacity and capability to translate and implement the best available evidence into effective action to increase value [and reduce waste]" in health systems.

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31. Efficacy of an online training programme to support the application of the guideline evidence-based health information: a randomised controlled trial and process evaluation

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BACKGROUND. The guideline evidence-based health information (www.leitlinie-gesundheitsinformation.de) comprises general and ethical requirements as well as 21 evidence-based recommendations on the development process, content, formats, presentation and target group orientation of evidence-based health information (EBHI). It addresses providers of health information and its goal is to improve the quality of health information. We explored the competences of providers of health information. Based on these results, we developed and pilot tested a training programme to support the application of the guideline.

AIMS. Aim was to evaluate the efficacy of the training programme to support the application of the guideline evidence-based health information. We expected the intervention to improve the quality of health information in comparison to the provision of the guideline alone. We performed an accompanying process evaluation to assess barriers and facilitators for the implementation of the guideline evidence-based health information and the training programme. (Registered on 7 March 2019: ISRCTN96941060)

METHODS. In a randomised controlled trial providers of health information (institutions / groups with up to ten members) were enrolled and allocated to the intervention (guideline and training programme) and control group (usual care, publicly available guideline). The online training programme (40 hours offered over a period of at least six to seven weeks) comprises a module on evidence-based medicine (e.g. literature search, critical appraisal, data extraction) and a module to prepare the application of the guideline. The programme comprised self-study periods (e.g. videos, texts and work assignments using a learning management system) and three to four synchronous virtual meetings (90 -120 minutes each). The primary outcome parameter was the quality of the health information. Quality is operationalised as the extent of adherence to the guideline's recommendations assessed with the Mapping Health Information Quality (MAPPinfo) Checklist. Each provider prepared a single health information on a freely chosen topic that was rated with MAPPinfo by two raters independently. As part of the process evaluation we performed interviews with providers of health information in the intervention group and assessed their critical health literacy with the Critical Health Competence test (CHC test) before and after training.

RESULTS. Eighteen providers of health information (9 intervention and 9 control group) with a total of 54 individual participants (25 intervention and 29 control groups) were included. The groups were heterogeneous in terms of organisational form as well as the objectives and formats of the health information provided. There was no difference between the groups regarding the primary outcome (overall 12.5% to 45% adherence to the guideline's recommendations). However, participation in the training led to an increase in the participants' critical health literacy (persons parameter: 555 ± 105 baseline, n=25 and 656 ± 212 post-test, n=20). We identified individual and structural barriers to the implementation of the guideline recommendations such as uncertainties regarding literature searches and data extraction, lack of resources and differing requirements or interests of the institution or experts involved.

LIMITS. The sample size of 26 providers of health information could not be reached. A significant barrier to recruitment was the lack of resources and the time-consuming training programme.

CONCLUSIONS. We could not show a difference in the quality of health information between the groups, but the training content was considered relevant by the participants and there was an increase in critical health literacy. The training will continue to be offered and further developed in the course of a guideline update. Remaining challenges are to increase acceptance of the training and still enable providers to develop EBHI.

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32. Responsive Evidence Systems for African Policy Needs

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BACKGROUND. Evidence-informed decision-making is defined as "the process whereby multiple sources of information, including the best available research evidence, are consulted before making a decision to plan, implement and (where relevant) revise policies, programs and other services" (Stewart, Dayal and Langer 2017). The use of research evidence in decision making is of great importance to decision makers as it helps them understand a problem, frame options appropriate to respond to the problem, and use the most effective implementation strategy for interventions in their specific context. (Khalid, et al. 2020). There is an increasing interest worldwide to ensure evidence-informed policy-making as a means to improve the policy conception and its effective uptake. However, there is still a great challenge getting research evidence to policy makers in African countries. Some of these challenges are; Inadequate funds to conduct research, limited accessibility, complexity of research evidence terminology, also some of the research conducted do not responds to the specific needs of policy makers most often because research is carried out without consulting the policy makers. These limitations to EIDM in Africa have a direct negative effect on development projects. Through our international partner the South African Center for Evidence, we aimed at addressing the challenges of using research evidence by decision makers and mitigate these challenges through; the implementation of strategies that will help break the terminology barrier and provide research evidence in a more digestible form to decision makers, offer training to decision makers to reinforce their capacities on the appraisal and use of research evidence in decision making, provide timely responds to policy makers research needs and to rally funds to meet the decision makers research needs in time. The peculiarity of our approach is that decision makers are in the driver's seat to ensure the conducted research is relevant to their identified needs. This first phase of the project ran from March 2022 to December 2022 and delivered the first part of deliverable 1 of the 2 years project. This stage of the project was meant to map our stakeholders, create a collaboration with policy makers, organize stakeholder sessions and run surveys to assess the research needs of policy makers in Cameroon. Policy Makers from 6 ministries of Cameroon (MINESEC, MINEDUB, MINPROFF, MINAS, MINJEC, MINSANTE) and one regional assembly were engaged in the REAP project this year.

AIMS. The aim of the REAP (Responsive Evidence system for African policy needs project was: to understand the research evidence needs of policy makers; to conduct a need assessment survey that highlights the research evidence needs of policy makers; to identify the barriers to research uptake by policy makers in an African context; to identify best formats to get research evidence to African policy makers; to understand the challenges of policy makers accessing research evidence; to assess the capacity of policy makers in using research evidence; to understand the motivation of motivation of policy makers for using research evidence.

METHODS. Need Assessment Survey We conducted 30 Surveys with 6 ministries in Cameroon with consideration of representatives of vulnerable people. This survey carried 40 questions and was conducted for an hour. The survey was filled on papers and recorded. Focus Group Discussion A one-hour focus group discussion was organized with policy makers to discuss EIPM challenges and strategies to improve the use of research evidence in policy decision making Capacity Reinforcement Capacity reinforcement consisted of a one-hour training on EIDM (Evidence Informed Decision Making). The workshop was planned to remain a continuous process to be organized twice every year to enhance the uptake of research evidence in policy process.

RESULTS. 20 need assessments piloted. 86 stakeholders consulted. 78 policy makers engaged. 30 need assessments conducted. 2 Focus group discussions organized. 2 capacity reinforcement workshops organized. These are preliminary results and complete data analysis will be available before the conference.

LIMITS. • Getting in touch with policy makers • Fully engaging policy makers in research evidence • Full time commitment of policy makers in research activities

CONCLUSIONS. The use of research evidence in policy decision making in Africa is a gradual and complex process. But with contextually relevant approaches it is possible to enhance the use of research evidence by policy makers.

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33. A bibliometric analysis of statistical terms used in American Physical Therapy Association journals: pre- and post- COVID lockdown

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BACKGROUND. To support the development of evidence based practice curricula in physical therapist education, a bibliometric analysis by Tilson and colleagues identified common statistical terms and study designs encountered in physical therapy literature. This analysis assessed articles published between Oct 2011- Sept 2012 in peer reviewed journals associated with the American Physical Therapy Association (APTA). It has been 10 years since this initial bibliometric analysis was conducted, and in the interim, the body of physical therapy literature has matured. Additionally, research productivity was impacted worldwide by lockdowns associated with the COVID-19 pandemic. Our goal is to create an updated bibliometric analysis to reflect the current state of physical therapy literature. To do so requires identifying a representative window for analysis while also taking into account the impact of COVID-19. In this preliminary step, we compare the types of studies published in APTA associated journals in the 2 years before, during, and the 2 years after the peak period of the 2020 COVID-19 lockdown.

AIMS. To identify the most common study designs used in published physical therapy research before, during, and after COVID-19 lockdown

METHODS. We conducted a search in PubMed to identify all articles published in 13 peer reviewed journals associated with the APTA between the years 2018-2022. Abstracts were screened to identify study design. Studies without data (e.g., reviews/perspectives, comments) were excluded. Studies were grouped as: Pre-COVID lockdown (studies published in 2018-19), during COVID (2020), and post-COVID lockdown (2021-22).

RESULTS. Our preliminary search identified 2,536 eligible studies published in the 13 peer reviewed journals between 2018-2022. There were 899 studies published Pre-COVID lockdown (2018-19) and 1139 post (2021-2022). The most frequent study designs both pre-and post-COVID lockdown were cohort studies (23.5% and 23.6% respectively), systematic reviews (12.6% and 18.1%) and psychometric analyses (12.4% and 10.9%). Randomized controlled trials were published less frequently: 9.1% pre- and 6.5% post-COVID lockdown.

LIMITS. In this preliminary search, only one database (Pubmed) was searched, thus studies/journals not indexed in Pubmed were excluded.

CONCLUSIONS. In this initial step, we found that cohort studies, systematic reviews, and psychometric analyses were the most common study designs in physical therapy literature, both pre- and post-COVID lockdown. In contrast, the most common study designs in 2011-2012 reported by Tilson and colleagues were Cohort studies, case reports, and randomized controlled trials. Interestingly, there were more systematic reviews published post-COVID and fewer randomized controlled trials compared to pre-COVID. Our future work will update the most common statistical terms encountered in the literature.

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34. A voice enabled point of care Clinical search engine & Clinical question capturing platform for evidence based medicine

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BACKGROUND. Ample evidence suggests that healthcare professionals generate a great deal of clinical questions during their many patient encounters. At the core of proficiency in Practice Based Learning & Improvement (PBLI), a required global graduate medical curriculum competencies (ACGME, GME) is lifelong learning and quality improvement. PBLI also emphasizes scholarly skills of Evidence-Based Medicine (EBM).Point of care queries and learning seems to be an ideal time to capture self-reflective moments. However, lack of time, and an absence of a valid platform to track these critical reflective learning moments makes it difficult to practice self-reflection. Currently, there is no such clinical knowledge management platform for point of care questions/ knowledge gap identifications.

AIMS. We aimed 1) to develop an integrated point of care precise and concise voice activated web based clinical knowledge search engine for fast and time saving clinical information needs. 2) to provide a web-based platform for capturing unanswered point of care clinical questions for knowledge and evidence gap identification for reflective practice. 3) to develop a personalized decision support system for a clinician's own unique patient population based on ethnicity, socioeconomic status and geography. 4) to develop a clinical information resource based on point of care clinical questions' answers for robust personalized clinical decision support systems for personalized patient care and for life long self-directed learning and professional development for health care professionals. We expect that these objectives will lead to increased practice of reflective medical education, local patient population specific evidence based resources development and eventually improved patient care with personalized evidence based decision support repository for physicians for continuous professional development.

METHODS. We designed and implemented a cross platform (web, ios, android) for point of care voice based clinical search engine and clinical question capturing platform hosted at www.clinicalpearl.com. Main product features included voice based clinical information search engine for instant time saving, point of care clinical question capturing module for reflective learning and evidence based medicine, and a peer review editorial flow to ensure an authentic clinical knowledge base development for personalized clinical decision support. In addition, clinical discussion through user generated questions was also implemented to develop a crowd based continuous geographic topic specific knowledge base for clinician's own patient population based on their geographic and unique patients' demographic characteristics.

RESULTS. Beta testing of the platform was conducted in a large medical school setting to assess the feasibility and feature testing along with bug fixing. Preliminary usability study (N= 90) over a course of 12 weeks showed that point of care voice activated search engine not only helped Clinicians for a focused, fast instant point of care background question search to save time, but also provided a reflective learning opportunity by capturing point of care patient specific foreground question for evidence based answers' search. Most users found it very helpful to search point of care knowledge needs with a voice based search engine to save time for evidence based patient care. Point of care clinical query capturing tool was considered an excellent innovative strategy to identify personal knowledge gaps and to build user's own personalized decision support system for continuous professional development and competence for life long reflective learning.

LIMITS. Our study had several limitations. This was beta testing study for the platform, which required significant time and lack of direct supervision. Also, users have internet related issues in completing assigning tasks. Lastly, study participants had learning curve in exploring all the features of the application.

CONCLUSIONS. We have implemented a point of care voice based clinical search engine and clinical question capturing platform hosted at www.clinicalpearl.com. Preliminary evidence supports that this platform provides an opportunity for

enhancing reflective learning, knowledge gaps identification and personalized evidence based practice for their unique patient population. A personal knowledge repository for life long self-directed learning would benefit all healthcare professionals in coming years. Health care professionals at all levels of a career will be benefited from this planform. We plan to design and randomized clinical trial to assess the role of clinical pearl in providing granular insights about clinicians' daily clinical knowledge needs and impact of clinical pearl in enhancing self-directed learning activities and professional competence.

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35. Methods to improve digital literacy of health professionals to rapidly translate evidence into clinical practice.

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BACKGROUND. With the rapid adoption of digital technologies across healthcare settings worldwide, there is a need for evidence-based training to improve the digital literacy and digital capability of allied health, nursing, midwifery and medical professionals. From digital referrals and interventions to decision support systems, telehealth, digital triage and "hospitals without walls", digital technologies can improve patient outcomes through the delivery of accessible and efficient care across a broad range of health settings. Digital health competency frameworks for the health workforce include domains such as technology literacy, health information management, digital communication, ethical, legal, and regulatory requirements, data privacy and security, and client access. Digital health training for health professionals aims to improve competencies relevant to local settings, health care worker groups, roles and case-mix.

AIMS. (1) To understand the best, evidence-based methods to improve digital maturity, digital literacy and digital capability of nursing, allied health and medical professionals working in healthcare settings. (2) To understand training requirements to achieve the level of digital maturity and digital capability needed in healthcare organizations across the globe.

METHODS. Health professionals from eight major hospitals from the Academic Research and Health Collaborative (ARCH) Australia, attended eight focus groups in 2022. 23 clinicians generated qualitative data on the perceived barriers and enablers to the adoption of tech-enabled care and online therapy, including the education and training needs for improving digital literacy. Digital maturity and digital capability were also rated using Likert scales. We used the Braun and Clarke (2012) thematic analysis framework to conduct a qualitative analysis of the full focus group transcripts. After initial codes were generated from the focus group data, we identified key themes and the main study findings.

RESULTS. Poor digital literacy and maturity was a key theme arising from the focus groups. Most health professionals only had developing levels of digital maturity, and less than one-quarter had intermediate levels of digital literacy and digital capability. Although most had pivoted to online service delivery during the COVID-19 pandemic, they were often unsure about which cyber safety protocols and digital health frameworks to follow. Access to tech-enabled service delivery was another theme. Many had only limited access to IT platforms to support optimal delivery of therapy online. Another theme was the need for training. Few health professionals had received formal education and training on how to implement evidence-based digital healthcare.

LIMITS. All of the data were collected in Australia and generalizability to other counties and cultures is yet to be determined.

CONCLUSIONS. Globally validated evidence-based education tools are needed to improve digital literacy and capability in health professionals, so they can safely deliver science-informed therapies to patients online, using digital technologies.

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36. Teaching Evidence-Based Medicine to Large Classes of Undergraduate Medical Students: Team-Based Learning versus Small Group Discussions: A Randomized Controlled Trial

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BACKGROUND. Teaching of Evidence-Based Medicine (EBM) in large classes is challenging. The new undergraduate medical curriculum of the Faculty of Medicine, American University of Beirut starts EBM instruction in first year and continues over four years of medical school. Classes are large in size (100 to 120 students per class), with only seven instructors participating in EBM teaching. Because of variable availability of the instructors, the class is divided into groups (11 to 15 students per group) for small group discussions (SGD) if there are three or more instructors, whereas Team-Based Learning (TBL) is used when instructors are less. However, evidence on the superiority of either instructional method over the other is lacking.

AIMS. To investigate the effectiveness of TBL in increasing students' EBM knowledge and skills in comparison to SGD.

METHODS. Between April 2018 and May 2019, all first-year medical students of class 2021 (N=108) were instructed in critical appraisal by seven EBM instructors from the departments of Anesthesiology, Internal Medicine, Pediatrics, Pharmacology, and Surgery. Students were randomly allocated into TBL or SGD group, using a computer-generated permuted block randomization of variable block sizes. Allocation was concealed from students and instructors until the first day of the course. All students were provided with the same reading material. TBL sessions followed standard TBL instruction format whereas SGD conducted active discussions of papers with the instructor. Instructors rotated on groups according to a computer-generated sequence to assure similar student experiences. Our primary outcome was student's score on the Berlin Questionnaire at the end of second year. Class size assured 80% power, 5% alpha level to detect a difference of 0.55 SD in mean Berlin questionnaire scores.

RESULTS. Students' mean (SD) age was 22.0 (0.7) years. Baseline characteristics of the two groups were similar (all p values >0.05). The mean (SD) Berlin scores of both groups were also similar: 80.4 (11.6) and 80.4 (12.1) for TBL and SGD respectively; p=0.997. Multivariable stepwise linear regression revealed that the only positive predictors of Berlin score were student's performance on the Epidemiology and Biostatistics course in first year (ß=0.560, p=0.002) and rank upon admission to medical school (ß=3.048, p=0.031), after adjusting for gender, Medical College Admission Test score, student's self-reported preferred teaching method, and group (TBL vs. SGD).

LIMITS. Our findings may not be generalizable to other educational settings with larger pools of EBM instructors, or to online instruction as all our sessions were conducted prior to the COVID-19 pandemic.

CONCLUSIONS. Both TBL and SGD are equally effective instructional formats that can be used to teach EBM in large classes of undergraduate medical students. Competence in epidemiology and biostatistics enhances students' knowledge and skills of EBM. Replication of our findings may be needed in other educational settings.

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37. The impact of evidence-based practice guidelines adherence on clinical outcomes in patients with cancer: A systematic review and meta-analysis

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BACKGROUND. Clinical practice guidelines are developed to standardize care by providing physicians and decision makers with evidence-based recommendations. There is a paucity of evidence on the impact of adherence to such guidelines on health outcomes, especially in patients with cancer.

AIMS. To determine the effects of guideline adherence on clinical outcomes in patients with cancer.

METHODS. Five electronic databases were searched through April 2022 for studies with adult patients with cancer being managed with evidence-based guidelines compared to alternative standards or protocols for treatment. Outcomes of interest were overall survival, disease free survival and quality of life. Screening, data abstraction and risk of bias assessment were completed in duplicate. A random effect meta-analysis was conducted and an assessment of the certainty of evidence was done using the Grading of Recommendation Assessment, Development and Evaluation (GRADE) approach.

RESULTS. Sixty primary studies were included and comprised of 59 cohort studies and 1 randomized controlled trial. Most of the studies were conducted in Europe (58%), followed by North America (28%). Most of the studies included patients with gastrointestinal (30%) and breast cancers (28%). Meta-analysis of 5 retrospective studies, with an average of 5 years follow up suggests adherence to guidelines results in increased survival in patients with breast cancer (hazard ratio [HR]=0.70 (95% confidence interval [CI]: 0.64-0.77); p<0.001; Low certainty of evidence). Studies in other cancer disease sites showed similar results but could not be pooled due to clinical heterogeneity. There were no studies evaluating quality of life.

LIMITS. The literature was limited to english only publication. There was only 1 RCT identified and the pooled studies were of retrospective registry study designs.

CONCLUSIONS. The available evidence suggests a beneficial effect of clinicians' adherence to guideline recommendations. Most of the guidelines used in the studies were consensus based and not based on a systematic review of evidence. Hence, there is need for more prospective clinical trials to evaluate the effects of guideline adherence on clinical outcome in patients with cancer especially with the use of guidelines developed from systematic review of evidence.

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38. EBM teaching in a pandemic: A pre-post comparison of medical students' self-efficacy for dealing with scientific literature

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BACKGROUND. In medical school, training in scientific competencies forms the basis for evidence-based decisions in later clinical practice. Part of the decision-making process is the competent handling of medical literature. Medical students in Germany still show a lack of scientific competencies. However, they rate these as important. At the University of Luebeck/Germany, 4th year medical students complete a two-week block course (BC) at the Institute of Social Medicine and Epidemiology as part of their curriculum. In addition to the content of Social Medicine, the BC also teaches the core competencies and application of evidence-based medicine (EBM) according to the EBM curriculum of the German-speaking Network EBM. With the onset of the Covid-19 pandemic in March 2020, universities worldwide experienced the sudden shift towards online teaching. We as researchers and also lecturers of the BC, transferred the BC in online mode and integrated the current pandemic events as a new didactic tool into the EBM teaching (e.g. therapy and diagnostic of Covid-19, fake science). In doing so, we non-systematically observed that the students developed a pronounced interest in using the EBM content for a more competent handling of medical literature on the ubiquitous pandemic. In times of conspiracy theories and fake science, especially the own ability to assess the validity of current evidence seemed to be an important topic.

AIMS. The aim of this study was to examine whether and to what extent the teaching of EBM concepts referring to current pandemic events influenced students' self-efficacy for dealing with medical literature on Covid-19.

METHODS. In this prospective study, a pre-post online survey at eight-week intervals was conducted. All 4th year medical students (n=221) who participated in the BC of the academic year 2020/2021 were invited to participate. A self-designed questionnaire (pretested with a Cronbachs-a of 0,8) included five items on self-efficacy (according to Bandura) with regard to handling scientific literature on Covid-19. These were transferred into a score based on the well-known five steps of EBM on a scale 0-25. Furthermore, demographics and interest in scientific literature, the pandemic and importance of EBM skills were assessed. Differences between the pre-post survey were tested by paired sample t-test.

RESULTS. A total of 83 out of 221 students (38%) participated in both the pre- and post-survey (71% female, 24.8 ± 3.4 years). Higher scores were observed in self-efficacy concerning medical literature on current pandemic events after participation in the BC (+3.0 score points (SP), $p<0.001$), as well as in the subgroups PhD program yes or no (+3.4 SP, $p=0.001$ and +2.4 SP, $p=0.002$, respectively). While interest in scientific literature increased by an average of 10.3 points in the winter semester, it slightly decreased in the summer semester (-0.5 points).

LIMITS. Due to the challenges with the pandemic, we were not able to implement a control group. Neither can we make any statement about changes in students' EBM competencies after taking part in the course. Nor can we compare grades of the student's performance of the course with pre-pandemic times as we had to change the assessment modalities with the beginning of the online teaching. Furthermore, social desirability cannot be excluded.

CONCLUSIONS. After participating in the BC, the self-efficacy of students in dealing with scientific literature has changed positively. The extent to which the pandemic situation is responsible for this change can only be assumed. Since the pre-post effects on self-efficacy were greater in the winter semester, the high impact of the pandemic in winter 2020/21 in Germany could have led to a better ability of students with regard to scientific literature. Despite its worldwide devastating challenges for personal and professional lives, the Covid-19 pandemic provided an important opportunity to highlight the importance of EBM competencies for medical students by personal participation and active learning. Therefore, the use of current and student-related topics in EBM teaching can be recommended as a useful didactic method. Nevertheless, more research and exchange on EBM teaching topics, also with regard to methodological and didactic principles, is required.

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39. Peer feedback activity over critical appraisal of a RCT in a postgraduate-level online unit of study in introductory clinical epidemiology

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BACKGROUND. Critical appraisal is a key skill for healthcare professionals in making clinical decisions based on up-to-date evidence from research. We introduced a peer feedback activity in a postgraduate-level online unit of study in introductory clinical epidemiology at the University of Sydney where students critique each other's attempt at critically appraising a RCT. This unit of study is designed for healthcare professionals and clinical researchers with the majority of students being junior medical doctors.

AIMS. To improve student capability to perform critical appraisal of a RCT on an intervention question. Students are expected to achieve higher-level understanding about critical appraisal when having to explain to a peer why their approach or conclusions are incorrect.

METHODS. Students attempted critical appraisal of a RCT, and their responses were randomly exchanged with other students on the Canvas e-learning website. Students reviewed the model answer (video and document) before providing feedback comments to a peer's answer. Additionally, students were given access to the "critical appraisal exemplars" that showcase common mistakes and explain why they are incorrect. Students remained anonymous in the entire process both when giving and receiving feedback. Teachers graded students for the quality of their feedback comments to the peer, but students did not grade (give marks for) each other's responses. The grading rubrics for feedback comments were disclosed to students to encourage them to demonstrate their understanding of the concepts around risk of bias in RCTs by providing specific feedback comments to address specific mistakes made by the peer instead of repeating the model answers. Students could review teacher's feedback comments on their own feedback comments to the peer, and also peer and teacher's feedback comments on their own critical appraisal. Final assignment of the unit of study included critical appraisal of a different RCT, and this peer feedback activity was evaluated via a student survey.

RESULTS. The mark distribution for the question in the final assignment where students perform critical appraisal of a different RCT have lost the long negative tail after the activity was introduced compared to previous semesters. This means that there are now much fewer students who performed critical appraisal poorly in the final assignment. In the evaluation survey in Semester 2 2022, 51 out of 53 respondents agreed that they "developed relevant critical and analytical thinking skills". Many students thought the activity forced them to analyse the model answers deeply and helped them consolidate their knowledge. Despite that students remained anonymous, the main student concern was that they worry about being wrong themselves or hurting the other student's feeling.

LIMITS. We anticipate that this peer feedback activity would be useful for critical appraisal of other study types (in this unit of study, we teach critical appraisal of systematic reviews, prognosis studies, and screening and diagnostic test accuracy studies). However, teachers spend 30 minutes per student to provide feedback on student peer feedback comments and it is not practical to repeat this activity for other study types. Instead, we encourage students to find a peer feedback partner and continue providing peer feedback to each other informally.

CONCLUSIONS. The peer feedback activity improved student capability to critically appraise a RCT and was received well by students as an excellent scaffolding activity.

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40. The problem of citation bias – a scoping review

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BACKGROUND. Citing previous research is a well-established practice within scientific research. The purpose of citation includes crediting earlier authors, providing background, authenticating data or facts, and informing a new study to answer questions that matter in a valid, efficient, and accessible manner. However, findings show that researchers' choice of literature to cite is not necessarily based on the intended purpose. This might constitute a bias that can threaten the validity of scientific research

AIMS. To uncover and map the breadth and characteristics of the available empirical evidence on citation bias.

METHODS. A scoping review was performed with protocol registration in Open Science Framework (osf.io/mhu9z/). We included published empirical meta-research studies reporting any source of citation bias in the context of health research. Studies should uncover factors potentially affecting citation rates in a way that could be considered biased. No limitations were applied regarding the time of publication, language or study design. Two independent reviewers performed the selection of studies and data extraction. The search was performed in MEDLINE Ovid, Embase Ovid, Cochrane Methodological database and CINAHL using search terms including "citation bias", quotation bias", "selective citation", and "reference bias" and combinations and synonyms for these. Reference lists of included studies were reviewed as well. Data were presented by descriptive statistics, including frequencies, portions, and percentages.

RESULTS. Sixty-nine meta-research studies were identified and published between 1982 and 2019. Most studies applied a cross-sectional design, while a few conducted a systematic review design. Presently, the mapping is not finalised, but it will include (1) the type of citation bias identified; (2) the kind of impact due to citation bias; (3) the relationship between the type of citation bias and impact; (4) possible research gaps combining medical specialities and type of citation bias; (5) possible research gaps combining medical specialities and type of impact; (6) possible research gaps combining research topics and type of citation bias; and (7) possible research gaps combining research topics and type of impact. The results will identify possible future systematic reviews of meta-research evaluating citation bias. Surprisingly some of the meta-research studies indicated that citation bias might be an excellent strategy to increase citation rates and thereby assist authors in improving the impact of their work.

LIMITS. As it was a scoping review including heterogenetic studies, no syntheses were performed. Thus, it is impossible to present the overall relative risk for citation bias or any subgroup of citation bias.

CONCLUSIONS. With 69 meta-research studies evaluating citation bias, it will be possible to present the breadth and characteristics of citation bias. Thus, researchers will be able to be aware of the types of citation biases and their potential impact and thereby minimise the risk of citation bias. Finally, citation bias has been suggested to be one of several reasons why authors justify and design new studies poorly. The knowledge about both the types of citation bias and the possible impact of these can help improve the justification and design of new studies, even when placing new results in the context of existing evidence.

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41. Invited To Dinner But Not To The Table: Web Content Accessibility Evaluation For Persons With Disabilities.

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BACKGROUND. Disability is very common and yet not well understood within Sub-Saharan Africa countries. There has been a growing attention to the use of research evidence to improve social inclusion of persons living with disabilities.

AIMS. The purpose of this paper is to report on a process that can be used to monitor and evaluate evidence databases to encourage improvements in website and content accessibility for People with disabilities.. To achieve this goal, we set out to examine five evidence communities' online databases by (1) assessing the accessibility of these databases website through the web browser and (2) assessing the resources within these websites (database). Finally, we aimed to provide feedback from the evaluation to these evidence databases.

METHODS. We carried out a cross sectional study of five online evidence databases using the Web Content Accessibility Guidelines (WCAG). WCAG is a universal standard for web content accessibility assessment. We assessed access to the databases using these guidelines, while using a purposive sample of 25 resources within them

RESULTS. The five websites of the databases scored an average of 78.6% [range: 73%–87%] compliance with best practice following WCAG. Resources are meant to improve practice, policy and decision making for all including people with disabilities. They include systematic reviews, reports, articles amongst others. Being able to access and consume them is another step towards achieving the aforementioned. Accessibility is being able to obtain, reach, understand and use resources in this context. Therefore addressing barriers that could hinder one from getting and using resources is of importance. A total of 25 resources from the five databases were tested for accessibility and they scored an average of 52.5% [range 12.5% – 70%].

LIMITS. The study used open source software which did not provide all the rigour our research team would have desired.

CONCLUSIONS. Even though these evidence databases are considered as enabling inclusion and diversity within the evidence ecosystem their contents are not fully accessible to people with disability and only partially met the WCAG recommendations. Evidence databases should include web accessibility check before manuscript submission by authors.

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42. A qualitative study of students' and teachers' experiences with an online course in evidence-based practice

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BACKGROUND. According to "National Curriculum Regulations for Norwegian Health and Welfare Education" (RETHOS) graduates must be able to practice evidence-based. Systematic reviews conclude that teaching and learning evidence-based health care should be interactive, multifaceted, include assessment, and ideally be integrated into clinical practice. To meet these expectations, teachers at Western Norway University of Applied Sciences developed an online course in evidence-based practice (EBP) using the Canvas learning management system. The online course was designed to support the learning of EBP at the bachelor level. We created profession-specific and clinically relevant content to ensure applicability across all bachelor programs in health and social care. Content included text, video presentations, multimedia productions (e.g., digital stories), podcasts, and H5P content (e.g., interactive tasks such as drag-and-drop tasks, flashcards, and branching scenarios with video and integrated tasks). All content was universally designed.

AIMS. To explore experiences with an online course in evidence-based practice among students and teachers in bachelor programs within health and social care education.

METHODS. Spring 2022, individual interviews were conducted among teachers (n=9) from six different bachelor programs (nursing, occupational therapy, physiotherapy, radiography, social education, and social work). Focus group interviews were conducted among physiotherapy students (n=10) and social education students (n=6). Systematic text condensation was used for the analysis of the data.

RESULTS. Students appreciated the variety of content and interactive tasks, although several expressed that it was a complex course with a lot of content. This was less of a problem for students who received specific instructions about why they should use the course (e.g., to prepare for class on EBP) and what content they should prioritize. Some students highlighted that they lacked motivation to use the course and to learn EBP, as they struggled to see the relevance of EBP for clinical practice. They believed that if their EBP competence was assessed in exams, this would motivate them to use the course and to learn EBP. Teachers experienced that the online course facilitated the teaching of EBP. However, they also expressed that it was a complex course with a lot of content, and some of them experienced that it could be difficult to achieve an overview of the content and the course structure. Most teachers believed that assessing EBP competence could be a key to motivating students to use the course to learn EBP. In addition, some teachers highlighted the importance of using resources from the course frequently and actively in their teaching of both EBP and other topics to improve students' perceptions of relevance of the course. Some teachers felt a need for a community where they could share experiences concerning the use of the course and teaching EBP. They believed that opportunity to share experiences with colleagues could facilitate further engagement among colleagues.

LIMITS. We interviewed participants from one institution only, however, participants were based at different campuses at HVL and were affiliated with several different study programs. This study's findings echo findings from previous and similar research. Therefore, we believe that the result may be transferable to other countries, institutions and different health and social care study programs.

CONCLUSIONS. An online course in EBP can facilitate the teaching and learning of EBP among bachelor students in health and social care education. However, successful teaching and learning experiences require that teachers provide specific learning instructions, demonstrate the clinical relevance of learning EBP and assess EBP competence among students.

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43. Experiences with Integrating Best Evidence in Clinical Care in Middle Africa Through EBM Africa Network

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BACKGROUND. Clinical care in Africa is largely dependent on WHO recommendations. These recommendations are mostly available for key infectious diseases including malaria, HIV, tuberculosis, and COVID-19. These recommendations also exists in formats that are not user friendly to clinicians thereby reducing their usability in clinical care settings. Limited resources in Africa and competing priorities mean that investments in research in health is also limited. However, existing research recommendations from the global north can be adapted or contextualized for the global south to enhance quality of care.

AIMS. To build capacity for clinicians in Africa to integrate a trustworthy, locally relevant, and contextualized point of care clinical guidelines for resource limited settings. To assess the acceptability, relatability, and feasibility of a clinical point of care decision aid for clinical practice in Africa adapted from existing research recommendations from the global North and WHO.

METHODS. Setting: Cameroon, Nigeria, Benin, Rwanda, Senegal. Participants: clinicians (doctors and nurses), community health workers, and consumers. We developed point of care clinical guidelines portal at www.ebmafrica.net for English and French speaking clinicians in Africa. A clinical editorial team from 4 countries were involved in prioritizing and adapting clinical recommendations to local context. The editorial team engaged experts from Cochrane Nigeria, Cochrane Cameroon. These included physicians from Cameroon, Rwanda, Nigeria, and Benin. The POC clinical recommendations were developed WHO guidelines for Malaria, HIV, tuberculosis, and soil transmitted helminths. Further access to over 4000 clinical guidelines from Duodecim Guidelines and EBM France were also linked to the platform. Platforms are linked with drug data bases. We organized an online training for clinicians from Cameroon, Nigeria, and Rwanda. A follow up in person training for clinicians from Benin was organized in 2022 following an expression of interest. A platform for consumers using podcasts is also being developed.

RESULTS. One EBM Africa platform set up for point of care clinical guidance for 3 African countries (Cameroon, Nigeria, and Rwanda) and accessible to clinicians from 4 African countries (Cameroon, Rwanda, Nigeria, and Benin). Early stage training and adaptations for Senegal and expressed interest from Tunisia. A pilot assessment of the EBM Africa concept suggest a high rate of acceptability and uptake by clinicians. There is a usually a high traffic to site following training but this slows down overtime as clinicians become familiar with clinical recommendations.

LIMITS. The pilot study focused on Cameroon, Nigeria, Benin only. The pilot study is unable to measure patient outcomes as impact of EBM Africa on clinical practice. Engaging ministries of health in African countries is still limited and requiring an engagement of WHO.

CONCLUSIONS. Improving health outcomes in LMICs requires ensuring accessing to trustworthy and context relevant point of care clinical guidance for clinicians, community health workers, and consumers. Our project strengthened continuing medical education to integrate evidence-based recommendations into clinical practice in Africa. Using existing clinical recommendations reduced research waste, improved the integrity and social value of research, and enhanced the quality of healthcare in Africa. The link of experiences and resources between the Global North and South provides an opportunity for continuous exchange, networking, and contributions to amplify the global use of effective health interventions.

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44. Teaching Evidence-Based medicine to medical students using a Virtual Journal Club: A mixed method study

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BACKGROUND. Evidence based medicine (EBM) is an essential skills for medical students and trainees for effective clinical practice. Teaching EBM is, however has its challenges. Most commonly, Journal club, "an educational meeting, with a true purpose of acquiring, disseminating, and applying new research information" is used to teach evidence based medicine skills such as critical appraisal. Virtual Journal clubs have been used increasingly to teach evidence based medicine skills due to various limitations of traditional in person journal club meetings.

AIMS. The purpose of this study was to assess the probability of being able to teach a diverse participant pool EBM concepts in a two day workshop. As well as to compare traditional routes of critical appraisal of medical articles, versus the usability of a novel innovative platform (i.e. the virtual journal club tool) with the main goal of making article appraisal quick, effective and more comprehensive administered through a 2 day CME EBM workshop.

METHODS. A total of ninety nine(99) participants took part in a mixed method study consisting of undergraduate medical, dental and pharmacy students, as well as a number of postgraduate trainees and practicing doctors who attended a 2 day CME EBM teaching workshop. Day 1 of the workshop entailed an introduction to EBM and its principle concepts, whereas Day 2 of the workshop entailed practical sessions and smaller group discussions using the virtual journal club platform. A pre and post course survey was conducted to assess the outcome of the EBM workshop which consisted of Likert scale questions and focused on exploring the participants self-reported knowledge, as well attitudes, practices and barriers of EBM among all participants. A post workshop quiz was also administered in order to assess the level of comprehension experienced by the attendees after using the Virtual Journal Club platform.

RESULTS. Virtual implementation of Journal club at a large medical school was conducted to assess the usability and flow of a typical journal club over a few months. Majority of the people (96%) found the virtual journal club effective for learning EBM skills. (96% including neutral, agree, and strongly agree, 86/89), Most students agreed that the workshop improved their EBM skills (98.8%). 96.6% Participants of the study would highly recommend VJC to others great majority of students (95.5%) agreed the workshop led to confidence in critical appraisal. Preliminary usability data supports the benefits of virtual Journal club in promoting scholarly activities among students, residents and faculty. Particularly, Interactive simulation based guided critical appraisal questions to critically appraise literature was found very helpful in assessing quality of the evidence of an article. A built -in EBM calculator, automated slides presentation generation and automated article summary generation helped in saving time for most learners for Journal club presentations. Faculty also found streamlined workflow to assign, monitor and disseminate EBM teaching through faculty's pre appraised landmark articles for teaching EBM skills to be very helpful. A built in quiz and survey tool provided both summative and formative assessment of learning outcomes of EBM teaching.

LIMITS. Our study had few limitations. First, this was a mixed method study which has challenges of quantitative and qualitative data combination and results interpretation. Secondly, most of study participants had learning cure with technology and internet connection issues. Lastly, baseline EBM knowledge was also a limiting factor.

CONCLUSIONS. This study showed that Virtual Journal club and built in pre appraised landmark trials by specialty provided a much needed e-learning curriculum for EBM teaching for administrative convenience. In particular, an organized framework for appraising articles made it easier for learners to appraise articles with interactive guided critical appraisal questions. Learners agreed to use Virtual journal club platform in future if available. We plan to design a randomized clinical trial to further assess the effectiveness of Virtual journal club in teaching EBM skills along with mobile app development. In summary, our

study showed that Virtual Journal club with built in interactive reader using targeted questions and a group debrief led to better understanding of the evidence and its clinical applicability. The COVID-19 pandemic may be a better time than ever to explore innovative ways to teach evidence-based medicine in medical school and residency training.

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45. The effectiveness of an integrated knowledge translation intervention on the implementation of NEWS2 in nursing homes. A pragmatic cluster RCT

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BACKGROUND. Over the last centuries, life expectancy has doubled, and while gains in longevity are celebrated, they also pose significant challenges for our healthcare systems. One of which is that the proportion of people over the age of 80 is expected to double by the year 2050 facilitating a need for more and improved care. Improving the uptake of relevant and reliable research to improve care is an important priority, according to the WHO. Integrated knowledge translation (IKT) has emerged as an implementation strategy that can accelerate the uptake of research into clinical practice. IKT is a form of collaborative research, where researchers, knowledge users and decision makers work collaboratively to tailor interventions based on clinical needs. Earlier studies suggest that multifaceted and tailored interventions can be both effective and potentially improve implementation compared to single component strategies, in the healthcare setting.

AIMS. The aim of this study was to implement a tailored, adaptive, and multifaceted KT program and assess its effectiveness on clinical practice in nursing homes. Through collaboration, partners decided to address early detection of deterioration and acute illness among nursing home residents, using the National Early Warning Score-2 tool (NEWS2).

METHODS. This study is a pragmatic cluster randomized controlled trail assessing the effectiveness of an integrated knowledge translation intervention, implementing NEWS2 in nursing homes. The intervention consisted of two parts and a follow-up. Part 1 was an educational KT component, identifying relevant knowledge-to-action gaps, delivered for nursing home staff in 2019 (15 ECTS university course). Part 2 was a clinical intervention, implementing NEWS-2 in clinical practice in 2019- 2020. In addition, there was a follow-up period between 2020 –2021. All the nursing homes in Bergen municipality in Norway (n=21) were eligible for inclusion. Nursing homes were matched (blindly) and randomly assigned to an intervention or control group, using a random numbers generator. Data was extracted from the Electronic Patient Journal and analysed using a multilevel regression model.

RESULTS. Nine nursing homes (2749 residents) were assigned to the intervention group, and ten to the control group (2101 residents). The tailored implementation strategy, had a large effect on the use of NEWS2 among care staff in nursing homes during 2019-2020, compared to a control group. During the final month of the clinical intervention period, every resident in the intervention group was assessed with NEWS2, 1.44 times (95%CI [1.23, 1.64]), which is almost four times more often than in the control group (m=0.38, 95%CI [0.19, 0.57]) (d = 2.42). During the follow-up period, between 2020-2021, the effect of the intervention was not only sustained in the intervention group but there was a substantial increase in the use of NEWS2 in both the intervention (m=1.75, 95%CI [1.55, 1.96]) and control group (m=1.45, 95%CI [1.27, 1.65]), coinciding with the COVID-19 pandemic.

LIMITS. Some strength of this study is the extensive development phase with a dedicated IKT partnership, a robust cluster RCT design, an extensive observation period of 13 months, with an additional 12-month follow-up period. In addition to using data from electronic patient journals to measure effectiveness of the implementation strategy. A limitation was that in IKT partnerships, the practice field is expected to participate in the entire research process. In many aspects we followed this principle, however, due to COVID-19, several of our planned activities together with stakeholder were not carried out as planned. In addition, the pandemic caused significant delays in extracting the data from the municipality.

CONCLUSIONS. This is the first randomized trial to assess the effectiveness of an integrated KT intervention in nursing homes. This tailored implementation strategy had a large effect on the use of NEWS2 among care staff, demonstrating that integrated KT strategies can deliver promising intervention results in the nursing home sector.

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46. Characterising Community Hospitals vocations and quality of care delivered to generate evidence for informed decision-making

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BACKGROUND. Community hospitals (CHs) are an intermediate care setting mainly staffed by general practitioners and nurses. Different organisational models for CHs have developed over time and in different contexts to meet the needs of the local population and to provide an adequate range of services. As the demographic, social and epidemiological characteristics of the population change, with the increase of chronic conditions and frailty, CHs can bridge the gap between acute care settings and home care. In Italy, the Recovery and Resilience Plan after COVID-19 pandemic and the subsequent Decree n.77 fostered the development of these settings as they can be key for the decentralisation of low complexity activities, for the relief of pressure on hospitals, for the interception of social needs. Considering the heterogeneity of organisational models, it is important to characterise CHs according to their catchment area and patients case mix, and to assess quality of care provided, to enhance their role in the health system.

AIMS. Characterising the case-mix of patients admitted to CHs in the Romagna Local Health Authority (RLHA) and where they come from and are discharged to, and proposing a set of indicators for quality of care assessment in this specific setting. Evaluating the feasibility of systematic use of PREMs.

METHODS. Study population: retrospective observational study including all patients discharged from October 2020 to June 2022 from the 6 CHs of the RLHA. Data were retrieved from the regional informative system of CHs (SIRCO), which includes socio-demographic characteristics, destination at discharge and Modified Barthel score on admission and discharge. Additional clinical information was collected from previous acute hospital discharge and from pharmaceuticals databases. Clinical complexity was measured using Elixhauser and M-CDS scores. The presence of moderate to severe dementia was assessed using ad hoc criteria based on linkage of multiple administrative databases. Outcome measures for quality assessment: destination at discharge and Barthel score improvement =10 at discharge after controlling for confounding with indirect standardisation. Patients' experience was measured using a validated questionnaire and feasibility of a digital survey was assessed.

RESULTS. In the study period, 1.869 patients were admitted to CHs of the RLHA; mean age was 80 years and 62% were female. M-CDS and Elixhauser scores highlighted high clinical complexity of admitted patients with variability among CHs. Patients were admitted mainly from acute hospitals except for 1 CHs that admitted patients mainly from home. Home represented the main destination at discharge in the overall sample, followed by acute care setting and long-term care, with different proportions among CHs. The proportion improving =10 points from admission on the Modified Barthel score exhibited a high variability among CHs. The proportion of patients with moderate-severe dementia was about 10% in the overall sample, ranging from 6,2 to 22,1%. The gathering of PREMs questionnaire in these settings showed an overall good compliance both from health personnel and from admitted patients or caregivers. However, patients and caregivers preferred paper mode over digital.

LIMITS. To ensure anonymity, PREMs could not be linked to administrative databases.

CONCLUSIONS. Our results concerning 6 CHs indicate a large variability in the case mix of patients and their outcomes. As different organisational models have been adopted for CHs, targeted to the local context, it is useful to monitor patients' profiles and outcomes to inform health care planning and to adjust to the evolving needs of the population. The development of specific outcome indicators, consistent with mission of these facilities is very important because we cannot rely on indicators derived from the acute settings. Of note, efforts to collect patient's experience measures may enhance patient-

centered care. The strong involvement of health professionals and caregivers is an integral part of the process of strategic planning and real world evaluation of the care provided. *Working Group: Maicol Carvello, Azzurra Bernabei, Claudia Matteucci, Chiara Tanzi, Stefania Baroncini, Patrizia Soldati, Silvia Mazzini, Marco Senni, Domenico d'Erasmo, Antonella Cerchierini

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47. See one, do one, teach one - Building capacity of African teachers of evidence-based health care through experiential learning

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BACKGROUND. The Collaboration for Evidence-based Healthcare and Public Health in Africa (CEBHA+) is a five-year project funded by the German Ministry of Education and Research with seven African (Uganda, Ethiopia, South Africa, Malawi, Rwanda) and two German partners. The main aim of CEBHA+ is to build infrastructure and long-term capacity for evidence-based health care (EBHC) and public health. As part of capacity development and to address the lack of teachers of EBHC in sub-Saharan Africa (SSA), we aimed to equip CEBHA+ partners with knowledge and skills to teach EBHC.

AIMS. To describe our approach and experience of training teachers of EBHC in SSA within a five-year project.

METHODS. We used an experiential learning approach to train EBHC teachers in SSA, comprising the following activities: First, CEBHA+ partners from all African institutions attended the Master-level semester course on Teaching EBHC at Stellenbosch University, Cape Town, South Africa in 2018. The aim of this course was to enable participants to develop an understanding of the fundamental theory relating to teaching and learning in an adult learning context, and to apply that theory in an authentic EBHC teaching context. This was a blended course comprising online learning and a one week, in-person contact session. Furthermore, participants had to plan, implement and evaluate a teaching event related to EBHC. Subsequently, CEBHA+ partners had the opportunity to apply the knowledge and skills gained through experiential learning and mentorship during the CEBHA+ Evidence-based Public Health (EBPH) workshops, offered in each of the African countries from 2018 to 2022. CEBHA+ partners joined an EBPH workshop in another country to observe and assist with facilitation, prior to hosting an EBPH workshop in their home country, where they were more actively involved in facilitating sessions. Experienced facilitators provided guidance and mentorship, and the team reflected on sessions throughout this process. During the Covid-19 pandemic, some of this support happened virtually. Lastly, CEBHA+ partners co-facilitated the CEBHA+ Train-the-Trainer in EBHC workshop in late 2022, which aimed to equip participants with the knowledge and skills to plan, implement and evaluate an EBHC learning event. In each country, we invited post-graduate students, clinicians, researchers and decision-makers that attended the CEBHA+ EBPH workshop to participate. This workshop was offered in a hybrid manner, with local participants meeting in-person in respective countries, and country teams connecting with each other via Zoom. Didactic input was given virtually, while the small group exercises were done in-person with local CEBHA+ facilitators.

RESULTS. This longitudinal 'see one, do one, teach one' approach was well suited to train EBHC teachers in SSA. While the Teaching EBHC module laid the foundation of knowledge and skills, experiential learning provided an opportunity to apply and consolidate newly learned skills. Reflections and mentorship were important in building relationships with and guiding novice facilitators and in supporting them to host an EBPH workshop in their home country. Teaching others during the CEBHA+ Train-the-Trainer in EBHC workshop was the ultimate opportunity to reinforce skills gained over a four-year period. Although the training of EBHC teachers occurred in a linear manner over a number of years, there was a lot of iterative learning. Integrating didactic learning, application of new knowledge and skills, reflection and mentorship throughout the process and in a cyclical manner was pivotal. CEBHA+ partners provided very positive feedback on the various activities, and the overall process. They feel well-equipped to continue teaching EBHC, and teaching teachers of EBHC, beyond the project period.

LIMITS. Our approach was time and resource intensive and involved a lot of travelling between countries. This might not be feasible without external funds. Although these are very practical skills, there is an opportunity to further explore virtual support and mentorship. We did not formally evaluate our approach, but rather reflected on it continuously over the project period.

CONCLUSIONS. A multi-pronged, longitudinal, experiential learning approach worked well to train EBHC teachers in SSA. Increasing the pool of EBHC teachers is a sustainable way to ensure that training on EBHC can continue once funding for the project ends.

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48. Living Evidence to Inform Health Decisions Framework (LE-IHD): A practical interactive framework based tool to guide the incorporation of Living Evidence in the development of knowledge transfer products

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BACKGROUND. Knowledge transfer [KT] products used to inform health decisions should be based on the most current evidence. A framework-based practical tool for incorporating the Living Evidence [LE] model can support teams in addressing this need.

AIMS. To define a framework that guides groups and organizations working in the health sector in the incorporation of the LE model for the development of KT products aimed to inform health decisions (The Living Evidence to Inform Health Decisions [LE-IHD] Framework). To develop a practical tool based on a valid framework to support the LE synthesis planning, conduction, and reporting to inform health decisions.

METHODS. The development of the framework followed an iterative process, including 1) A systematic review of methodological articles; 2) Brainstorming meetings; 3) The development of a preliminary LE-IHD framework; 4) Expert consultation (two rounds); 5) User testing; 6)Framework refinement 7) Validity assessment of the framework in a pilot study. The final assessment of the LE-IHD framework included a survey and in-depth interviews with the study participants in which we explored the framework structure and content; the content understanding; credibility; usefulness and pertinence. Results were taken into account for the development of the final version of the framework and the web-based interactive tool, including its user manual (handbook).

RESULTS. The literature identified 12 methodological articles that were used to generate a preliminary checklist of key aspects to be included in the guidance framework. The list included items for searching strategy and evidence surveillance, incorporating new evidence, revisiting the living parameters, transitioning out questions in living mode, reporting the results, and dissemination. This list was used to inform the core team brainstorming meetings aimed at developing a preliminary LE-IHD framework draft that underwent testing among 10 potential users from Cochrane centers and Spanish HTA agencies. In a concurrent way, it was presented and assessed by experts working on LE from Cochrane Australia; Cochrane France; NICE; Cochrane Canada, and the University of Beirut in independent interviews. User testing results and experts' comments and suggestions were used to refine the framework. A second draft was presented to experts before generating the final version, which was structured into four fundamental sections corresponding to the moment they are applied during the evidence synthesis process (planning, baseline evidence synthesis generation, evidence surveillance and incorporation; and reporting of evidence synthesis updates). A total of eight living evidence syntheses for the resolution of real-life relevant questions were conducted following the LE-IHD framework among HTA agencies and guideline-developing organizations. Survey results showed the framework is a useful and practical tool for guiding groups in the LE synthesis tasks. A random sample of 16 study participants was interviewed; most of the interviewees found the sections of the framework pertinent, complete, and with the adequate structure, division, and order. Regarding usefulness, all interviewees considered the framework overly useful to implement LE processes, supporting the establishment of the question of interest, planning the living process, and the evidence monitoring, through its guided methodology and centralized platform. Interviews results were taken into account for the development of the web-based interactive tool (LE-IHD framework) and its handbook which underwent final experts review and feedback prior to launching the tool for its use. The tool is available at: https://livingevidenceframework.com/en/platform/

LIMITS. The validation of the LE-IHD Framework included a small sample of European organizations in charge of informing health decisions. Exposure to a greater number of users is required to define their completeness in the processes required for

the different cases in real life. Although the framework was defined for intervention and diagnostic questions, the interactive tool only allows working on intervention questions. More funds are required to expand it to other types of questions.

CONCLUSIONS. The iterative process used in the LE-IHD framework definition, the participation of experts in evidence synthesis and guideline development or HTA reports generation, as well as the different tests in informing real-life health decisions, allow us to conclude that the LE-IHD framework is useful and has the desired quality to support the living evidence synthesis to inform health decisions.

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49. Effectiveness and user experience of digital plain language COVID-19 health recommendations (PLR) in people of different age and health literacy: Results of three randomized controlled trials and qualitative studies

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BACKGROUND. The COVID-19 pandemic underlined that guidelines and recommendations must be made more accessible and more understandable to the general public to improve health outcomes.

AIMS. The objective of these three trials and qualitative studies was to evaluate, quantify, and compare the public's understanding, usability, satisfaction, intention to implement, and preference for different ways of presenting COVID-19 health recommendations derived from the COVID-19 Living Map of Recommendations and Gateway to Contextualization (RecMap).

METHODS. We conducted three pragmatic allocation-concealed, blinded superiority randomized controlled trials (RCTs) in three populations to test alternative formats of presenting health recommendations: adults, parents, and youth (NCT05358990). The intervention arm received a plain language recommendation (PLR) format while the control arm received the corresponding original recommendation format as originally published by the guideline organizations (Standard Language Version). At the end of each survey, participants participated in an optional one-on-one, virtual semi-structured interview to explore their user experience.

RESULTS. Participants randomized to the PLR group had a higher proportion of correct responses to the understanding questions in general but in one of the three trials (in adults) we found an interaction between the type of PLR and the magnitude of effect. However, regardless of the organization issuing the recommendation, participants found the PLRs more accessible and more satisfying. They were also more likely to follow the recommendation if they had not already followed it and share it with other people they know. The qualitative interviews supported and contextualized these findings and provided guidance to further improve the digital PLR's aesthetic, accessibility, and credibility.

LIMITS. Digital health information that uses plain language advances dissemination may still not be accessible to all adults. For example, our intervention required access to the internet and English language proficiency and thus excluded those without internet access and culturally and linguistically isolated populations. A limitation of an online trial includes the inability to verify demographic data or the extent to which participants provided true responses. Our convenience sample for user experience interviews was mostly from North American, and therefore generalizability of the perspectives about the PLR format to other geographic settings may be limited. However, from what we have learned, we anticipate that some degree of simplification of language will likely enhance uptake and understanding of the guideline content across all settings.

CONCLUSIONS. Health information provided in a PLR format could foster understanding, accessibility, usability, and satisfaction among adults, and thereby has the potential to shape decision-making behaviour.

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50. Applying the behaviour change wheel to patient safety events to enhance evidence-based practice in a pediatric tertiary care centre

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BACKGROUND. Patient safety is a global health concern, with an estimated 10% to 18% of patients experiencing an adverse event during their hospital stay. Incident reporting systems enable healthcare institutions to identify, respond to, and prevent patient safety events; however, there is a need to better understand how well safety events are addressed with evidence-based actions.

AIMS. This study aimed to apply a behaviour change framework to analyze patient safety events and to identify whether the recommendations align with the behavioural and contextual factors influencing the safety event.

METHODS. Fifty-eight moderate-level patient safety events from a large pediatric tertiary care facility were analyzed using the behaviour change wheel (BCW). Three coders, including a mixture of clinicians and behaviour change scientists, independently coded each safety event by applying the Theoretical Domains Framework and Intervention Function components of the BCW to each safety event. Two independent researchers who were trained in the BCW then reviewed the list of codes and reached a consensus where there were discrepancies between coders. The final list of codes was then reviewed to determine whether the underlying behavioural and/or contextual factor related to the safety event was addressed with an appropriate intervention, based on the BCW.

RESULTS. Of the 58 safety events, a total of 114 lines of data related to the safety event description and 184 lines of data related to the recommendations were coded. Based on the 15 theoretical domains categories, six different types of safety events were reported. Environmental context was the most common type of safety event reported (n=29; 26.0%), while 22.0% of safety event descriptions were unable to be coded. Of the nine intervention functions of the BCW, education was reported 45.0% of the time, followed by environmental restructuring (26.0%) as the second most frequently reported type of recommendation. Sixteen (9.0%) of the safety event recommendation data points were unable to be coded. Of all the described safety event and recommendation data, 67 issues were addressed with interventions that aligned with evidence, based on the BCW, while 127 coded safety issues were not addressed with evidence-based recommendations.

LIMITS. This study was limited by the fact that the safety event data was self-reported and therefore there were inconsistencies in how the events and recommendations were described. Some of the safety events were not described in behavioural terms and therefore could not be coded with the BCW.

CONCLUSIONS. This was a novel study that used the BCW to analyze moderate-level safety events that took place at a pediatric tertiary care centre. The majority of reported safety issues were not addressed with recommendations that could bring about change based on an evidence-based behavioural analysis tool. Further research should focus on creating a systematic behaviour-based taxonomy for reporting safety events and to identify ways that future safety events can be addressed with evidence-based recommendations.

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51. Growth and quality of evidence for evaluating digital health interventions: an assessment of registered clinical trials

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BACKGROUND. The use of innovative digital health interventions (DHIs) has been rapidly increasing in healthcare practice, and research evidence on the effectiveness of DHIs is urgently required.

AIMS. To assess the quantity, design quality and characteristics of DHI trials registered on ClinicalTrials.gov.

METHODS. We searched ClinicalTrials.gov to identify interventional trials on DHIs. There were no restrictions regarding DHI types and conditions. The assessment focused on changes in quantity and quality over time during 2007-2022.

RESULTS. A total of 860 registered DHI trials was included. The annual growth rate was 78.6%, 60.7%, and 11.4%, respectively, during 2007-2014, 2015-2019, and 2020-2022. Majority of the trials were completed (75.3%), conducted in the USA (73.4%) and non-industry founded (83.1%). The major conditions concerned mental or behavioural disorders (25.7%), endocrine, nutritional or metabolic diseases (13.3%), certain infectious or parasitic diseases (9.9%), circulatory diseases (9.7%), and neoplasms (7.4%). It is particularly noticeable that the proportion of DHI trials of infectious diseases increased from 7.6% before 2020 to 16.0% since 2020. The purposes of most trials were categorised as treatment (35.8%), followed by health services research (16.0%), prevention (16.0%), and supportive care (14.2%). The proportion of RCTs was 89.7%, 74.5%, and 77.7%, the proportion of double-blind trials was 12.1%, 14.4%, and 18.5%, the proportion of phase 3/4 trials was 12.1%, 5.9%, and 5.5%, and the proportion of trials with a planned or actual sample size of >200 was 49.1%, 32.6%, and 37.3%, respectively, during 2007-2014, 2015-2019, and 2020-2022.

LIMITS. This study included clinical trials registered on one clinical trial registry, and did not include relevant trials from other clinical trial registries. We did not evaluate results of the completed studies, and information provided in trial registers is usually more limited than fully published studies.

CONCLUSIONS. The recent growth of the quantify of registered DHI trials has become slower than before, except of trials of infectious diseases. There has been no improvement in the design quality of registered DHI trials in terms of sample size, randomised allocation, and masking. Further investigation is required to understand the impact of COVID-19 Pandemic on the evidence evolution for the use and evaluation of digital health interventions.

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52. Why is UK emergency care in crisis? Scoping analysis of routine population data.

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BACKGROUND. Recovery from the COVID-19 pandemic is challenging for the UK National Health Service. Accident and emergency care is in crisis, with patients experiencing long delays in receiving care and ambulances backed up waiting to deliver patients into emergency departments. The causes are contested and poorly understood.

AIMS. We analysed data from the broader health and care system in Norfolk and Waveney in the East of England to identify changes in potential need and use over time, and potential bottlenecks in patient flow, to inform health and care services planning.

METHODS. Potential need was estimated from the prevalence of key conditions associated with emergency hospital admission and changes in population structure over time from 2018 (pre-COVID-19), through the height of the pandemic and up to December 2022. Data for Norfolk and Waveney were compared with all England data. Service use was estimated from routinely available data on the use of hospital emergency departments, calls to 999 (emergency) and 111 (NHS helpline), the ambulance service, primary care, and social care over the same time period, where data were available.

RESULTS. 4.2% of Norfolk and Waveney residents registered with a GP are aged over 65 years, compared with 18.4% for England. The deprivation score (Indices of Deprivation 2019) for Norfolk and Waveney is similar to all England. In those registered with a GP, the prevalence of conditions associated with emergency hospital admission changed little overall, and trends were broadly similar to those seen nationally. There were slight increases in the prevalence of diabetes, atrial fibrillation, cancer, and asthma and slight decreases in chronic heart disease and chronic kidney disease. There were no significant changes in other common conditions including chronic obstructive pulmonary disease and obesity. Monthly 111 calls peaked in March 2020 (53,649 calls), exceeding pre-pandemic levels, with another peak in December 2022 (53,494 calls). Average monthly calls for September – December inclusive were 29,746 in 2018 compared to 34,787 in 2022. Calls to the East of England Ambulance Service were 17% higher in 2021-22 than in 2018-19. Accident and emergency (A&E) department attendances dipped substantially during lockdowns in 2020/21, with a low of 15,081 attendances in April 2020, and subsequently increased again. There were approximately 28,877 non-booked attendances per month in September – December 2018 compared to 34,161 in September – December 2022. The top 5 reasons for attending in the years 2020 – 2022 have remained consistent and were chest pain, abdominal pain, arm injury, leg injury and shortness of breath. Ambulance response times for the East of England ambulance service have become substantially slower. The mean response time for Category 1 incidents (life threatening condition such as a cardiac or respiratory arrest) was 8 mins 2 seconds in 2018-19, compared with 9 minutes 50 seconds in 2021-22. The mean Category 2 (emergency or a potentially serious condition) response time was 25 minutes in 2018-19 and 45 minutes in 2021-22. The mean Category 3 (urgent problems, not immediately life threatening) response time was 1 hour 18 minutes in 2018/19 and 2 hours 20 minutes in 2021/22. Data up to December 2022 show that response times have continued to increase; the response times for C1, C2 and C3 incidents in December 2022 were 11 minutes 54 seconds, 2 hours 6 minutes, and 5 hours 10 minutes respectively. The percentage of respondents to the GP survey satisfied with phone access and appointment times in general practice (primary care) in Norfolk and Waveney dropped from 73.7% and 66.6% respectively in 2018, to 59.4% and 54.8% in 2022. The number of care home beds in Norfolk and Waveney decreased from 9.9 per 100 people aged 75 and over in 2018 to 8.8 in 2021 (the most recent data available). The number of nursing beds also decreased from 2.7 per 100 people aged 75 and over in 2018 to 2.4 in 2021.

LIMITS. All results are aggregated at population level and no individual level data were analysed. The results for different parts of the health and care system refer to different populations and are not directly comparable. They therefore do not reflect the flow of individual patients through the system.

CONCLUSIONS. The results provide evidence-based insights into new pressures on the health and care system at population level, and possible bottlenecks, in 2022 compared to pre-COVID-19 in 2018. The biggest changes were much slower ambulance response times, and a long-term decline in social care and nursing beds. A&E attendances increased and satisfaction with access to general practice fell. Smaller changes that are unlikely to be the cause of the current crisis include a slightly older population and slightly more calls to 111 and the ambulance service. The prevalence of conditions associated with accident and emergency use has remained broadly similar. A potential bottleneck in the system might be low availability of social care and nursing beds outside of hospital, resulting in back pressures through hospital to A&E and resultant delays to the ambulance service as ambulances are held up waiting to deliver patients to A&E. Further research on individual patient records is needed to map patient flow through the health and care system over time, to clarify the location and extent of bottlenecks in the system, before policy recommendations can be made. However, the decline in care home beds and the marked slowdown in ambulance response times warrant urgent attention from policy makers.

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53. Thirty years of developments in evidence-based practice: Have teaching and assessment methods in the health professions kept up?

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BACKGROUND. Despite the substantial attention that evidence-based practice (EBP) has received in contemporary published literature, including the health professions education (HPE) literature, how it is defined and operationalized as a component of training is often unclear and problematic. How to actually practice EBP is not well articulated in the literature beyond general statements about the need to use evidence and a list of tasks to be completed in a stepwise fashion (i.e., the 5-step process; Ask, Acquire, Apprise, Apply, Assess) all of which require significant judgment on the part of the clinician. If it is not clear how to practice EBP, it becomes difficult to teach, at least in the same way one would teach a learner how to perform a diagnostic test or procedural skill. This issue extends to assessment–how does one know if a skill is properly performed, if one does not even know what it looks like when done correctly? In other words, it is not clear which new skills, beyond efficient searching and application of formal rules of evidence, are required of the 'evidence-based' clinician, nor is it apparent how one should teach and assess EBP and employ it in clinical practice.

AIMS. The presenter will put forth a call for a deeper consideration of how EBP is taught, and for clarification on how it is defined and operationalized in HPE. The speaker will 1) ask what does it mean to practice EBP? What role does HPE play in helping realize EBP? How should the teaching of EBP change to adapt to developments in clinical practice and education? And 2) propose 4 avenues to advance the teaching and assessment of EBP: clarity on what is meant by EBP; clear articulation of EBP-associated competencies; empirically and theoretically robust means of promoting EBP competencies; ways to assess both EBP competencies.

METHODS. Drawing on seminal conceptual and empirical literature and considering advances in healthcare (e.g., shared decision-making, person-centered care) the presenter will 1) begin with a brief overview of the literature on the teaching and assessment of EBP to argue that teaching of EBP needs to change; 2) propose the components of an EBP teaching agenda.

RESULTS. First, various stakeholders should convene to discuss the benefits and drawbacks of a unified definition of EBP vs one that is adaptable to different professions and contexts. Discussion on terminology should also be included in HPE curricula to expose learners to the discussion and debates about the meaning of EBP. Second, the literature on what it takes to practice EBP is largely divided into two conversations: 1) EBM as a 5-step process and 2) EBP attributes (e.g., attitudes, knowledge, self-efficacy, behaviour), described as required to practice EBP. These discourses, found within a consensus statement on core EBP competencies and the Sicily statement must be reconciled to provide a more fulsome account of what it means and what takes to practice EBP. Third, the literature is replete with original studies and systematic reviews on the effectiveness of different teaching approaches. However, most studies are plagued with conceptual and methodological flaws which limit their use in HPE. Also, few authors have delved into the theoretical and epistemological challenges in EBP, which would significantly advance both its study and practice. Fourth, assessment of EBP competencies will not escape contemporary conceptualizations of assessment. Though there is an extensive literature on how to assess EBP and many tools developed in the last 2 decades, there are conceptual, definitional, and methodological challenges in many instruments that limit their successful operationalization in HPE. Given that single methods of assessment are generally unable to capture all of skill and attributed of EBP, multiple measures are needed. A system of assessment approach which integrate a series of individual measures that are assembled for one or more purposes longitudinally over the course of instruction may address these shortcomings.

LIMITS. These areas for consideration are not meant to be prescriptive or exhaustive; rather, they are proposed as ways forward, so that as educators in HPE, we can continue to reflect on how we can be ensure that our future health care professionals embody and enact the core principles, vision and ethos of EBP.

CONCLUSIONS. EBP continues to be presented as a process broken down into discrete skills and steps without a clear articulation of how this supports decision-making. Most HPE environments seems to favour teachers spending more time discussing the importance of evidence but leaves less attention to how does one actually practice EBP. Teachers and curriculum designers are invited to consider the need for, and the nature of a renewed agenda for teaching EBP such that if teaching and assessment methods in HPE have not kept up, we may begin to find ways to catch up.

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54. Evidence-based practice and knowledge translation: in tandem or in tension?

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BACKGROUND. Evidence based practice (EBP) has been synonymous to delivery of quality care for over thirty years. Since the movement's inception, the assumption has been that decisions based on high quality evidence would translate to better patient care. Despite EBP's original ethos, the rising body of literature on what EBP is, and how it may best be operationalized as an approach to decision-making, as well as its integration into health professions curricula across the globe, important research-to-practice gaps persist across healthcare. Knowledge translation (KT) was developed in response to a growing recognition of the overuse, underuse, or misuse of diagnostic tools and treatments. As a multi-phase iterative process, KT aims to promote the uptake of research evidence to bridge important research-to-practice gaps, improve practices and ultimately, patient care. Despite the theoretical and methodological developments in the field of KT, many interventions have failed to augment the use of EBP. The uptake of EBP is not a linear process, nor is it the exclusive responsibility of the practitioner. Importantly, its uptake is seldom a function of the strength of the scientific evidence. To address these issues and maximize the success of KT interventions, scholars have been increasingly interested in questions such as who is primarily responsible for generating evidence (i.e., researchers vs end users), to what end (i.e., curiosity driven research vs applied research), for whom (i.e., who is the targeted end user), and in what context (i.e., setting patient population). The relationship between EBP and KT may seem straightforward, with the latter considered the vehicle for the former; however, little literature has explicitly engaged with the links between the two processes, or the underlying conceptual, philosophical, and methodological principles of each approach, and how these may align or be in tension. This limited examination of such key questions and links between the two processes, has resulted in blind spots and created significant challenges for KT scholars whose efforts to increase the use of scientific evidence in practice may be compromised, in part, by outdated conceptualizations of EBP.

AIMS. The aims of this presentation are to 1) identify the conceptual and methodological blind spots of EBP, and how KT scholars should consider these for their interventions to succeed; 2) discuss the possible root causes of these blind spots; 3) discuss how a contemporary view of EBP can pave the way for KT interventions that will produce sustained behaviour change and improve health outcomes.

METHODS. The speakers will draw from the EBP and KT conceptual and empirical literature, as well as use examples from their research in stroke rehabilitation and musculoskeletal disorders to address the three aims. Specifically, they will use the findings from two published studies to demonstrate that a more nuanced perspective of EBP that accepts a pluralistic view of knowledge and embraces methodological diversity, considers the vital role of context in clinical decision-making, and supports the use of participatory approaches when designing, conducting, and implementing evidence, can optimise the impact of KT interventions.

RESULTS. Our combined research over the last 10 years on the root causes of the under- over- and/or misutilization of scientific evidence in clinical practice have converged on several individual (e.g., limited knowledge of the evidence, poor confidence in one's ability to adopt new practices, resistance to change, beliefs about the applicability of the evidence), organizational (restricted access to up-to-date evidence, competing demands on clinicians' time, leadership values and managerial styles) and systems level factors (e.g., regulatory expectations; government directives on care priorities) that alone, or in combination, influence clinician behaviour. Importantly, we have found that questions on the relevance and generalizability of the evidence; what constitutes a valid source of knowledge; the value of patient narratives; the context specificity of evidence- based decision-making; and practitioner agency in clinical decision-making require thoughtful consideration when implementing and measuring the impact of KT interventions.

LIMITS. Though the presentation draws on the multidisciplinary literature on EBP and KT, the examples are drawn from the field of rehabilitation. The conclusions may not generalize to areas of healthcare or patient populations other than those used in the examples.

CONCLUSIONS. There have been important advances in both EBP and KT over the last 30 years. Though there is general agreement that KT is a mechanism for improving the use of EBP, there is often tension between the fundamental tenets of each approach. The scientific community, practitioners and patients would benefit from clarity on the links between the two processes, so that the aims and ethos of each can be optimally realized.

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55. A protocol for the practical application of human rights in World Health Organization guideline development

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BACKGROUND. Respect for, and protection of human rights is central to advancing global health and wellbeing and to achieving more equitable health outcomes. The World Health Organization (WHO) has committed to integrating human rights principles and standards, including equality, non-discrimination, and a right to health, into its work and specifically, its guidelines. However, getting beyond empty commitments of 'promotion of the right to health' towards more practical and effective implementation when developing global guidelines across a diverse array of topics and health system issues is a major challenge for guideline development groups. Among the challenges guideline developers face is that human rights draw from a separate normative field and rely largely on legal standards, that are not always subject to empirical analysis. They are considered vital because they are inalienable to humans, not because applying them can be measured through controls of effectiveness. Nonetheless, practicality in decision-making requires policy-makers to make choices about interventions, informed by reliable and trustworthy evidence. In addition, human rights are said to be 'indivisible' – the right to water and sanitation inseparable from the right to health or the right to food. How can such a vast array of considerations be brought practically to bear on the reflections of decision-makers and how should decisions about acceptable prioritization and trade-offs be made? The COVID pandemic brought this dilemma to sharply into focus. The urgency of a global pandemic led many guideline groups to fall back into patterns of the past, constrained by time and with a dearth of evidence these would draw from expert opinion from a more narrow spectrum of mostly clinical expertise. When the overarching value of all guidelines is to improve the right to health, how can we ensure this intention is transformed into practical and meaningful instruction at every level of the process and its implementation, without overwhelming guideline developers, and particularly in an emergency? In this collaborative project, we sought to evaluate how Human Rights standards and principles have been used in WHO guideline development and what progress has been made since the adoption of formal guidance in the WHO Guideline Development Handbook (Chapter 5). We developed a protocol to guide this review that can be used to both evaluate guidelines, and as a prompt for guideline developers. Recognising the importance of a tailored and discursive approach to human rights integration in guideline topics, the key innovation in our work is a protocol-driven set of prompts encouraging guideline groups to consider human rights values most relevant to the health topics at the start of the guideline development process.

AIMS. a) develop a tool that identifies equity, rights, gender, and societal considerations (ERGS) relevant to the scope of a specific guideline b) to use the tool to evaluate 12 WHO guidelines with respect to ERGS c)to summarise the common themes identified in the evaluation.

METHODS. We trialled the rights framework approach on a selection of 12 WHO guidelines with a range of scopes. The first step was to identify the scope and perspective of each guideline. Following this we then identified which of the framework prompts was relevant to the scope, discussed why these are relevant and what we would expect in the guideline. We then used the 12 completed frameworks to evaluate the 12 published guidelines and summarised the key themes.

RESULTS. Results will be presented across the 12 guidelines evaluated detailing the full methods of the ERGS process evaluation and the content evaluation. We will discuss strengths and limitations of the method and suggest implications for a) planning a guideline; b) conducting a guideline meeting; and c) evaluating guidelines, and specifically how it can be used to inform recommendations.

LIMITS. We used an iterative approach to the tools development in order to achieve a balance between a complex and exhaustive interrogation of human rights and a tool that is usable by a range of guideline groups. We anticipate this to be the first iteration of many.

CONCLUSIONS. Guideline incorporation of ERGS principles varies greatly. We apply a novel evaluation methodology to illustrate how WHO incorporates these principles in guideline development, and propose new methods for meaningful inclusion in future guidelines.

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56. Developing a web-based Evidence-Based Research Training School – Challenges and Considerations

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BACKGROUND. Redundant clinical research is still being published due to lack of use of current systematic reviews (SR) when the research is designed. It can be seen as both unethical, and wasteful, particularly when the research involves people or animals. The overall aim of COST Action EVBRES (Evidence-Based Research) was to raise awareness of the need for and importance of using systematic reviews when planning new studies and when placing new results in context of existing knowledge. EVBRES defines "Evidence-Based Research" (EBR) as the use of prior research in a systematic and transparent way to inform a new study so that the research is answering questions that matter in a valid, efficient, and accessible manner. To fulfill this aim, a group of COST Action members was established with the task of developing an EBR Training School (TS) and providing training to at least 100 participants before the end of the COST Action.

AIMS. To develop a web-based Evidence Based Research Training school (TS) that would be sustainable after the COST Action was over. The aim of the TS is to introduce participants to the concept of Evidence Based Research (EBR) and support their ability to use existing evidence synthesis to justify, design and place results of the new study in the context of existing knowledge to avoid redundant research.

METHODS. At the start the developing group consisted of various healthcare professionals, most with teaching experience within higher education but many were new to the concept of EBR, and web-based learning was also a relatively new experience for most. Aside from deciding on and developing the learning outcomes and content of the TS, group dynamics and pedagogical issue, were considered, openly discussed, and tackled. The web-based TS evolved through several incremental steps, and tryouts, with detailed and thorough evaluation of both participants/students and teachers, as well as constructive feedback from other EVBRES COST Action group members. The onset of COVID-19 had both positive and negative effect on the process of developing the TS.

RESULTS. Seven TS have been provided, with over 100 participants/students successfully completing the TS. The first TS was designed as an onsite TS, consisting of lectures and group activities. The 7th TS is a fully asynchronous web-based course on Canvas platform, made up of 14 modules, with several different learning strategies utilized.

LIMITS. The concept of EBR is new and still being developed. Lack of knowledge related to development of web-based courses

CONCLUSIONS. Providing an EBR TS is an important step in increasing awareness of EBR among early career researchers as well as others. Its successful development and web-based delivery provides useful insights into designing web-based courses as well. Participating in the development of the EBR TS provided a great learning opportunities and experiences for participating COST Action group members, both in terms of EBR, learning strategies and designing web-based courses.

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57. Guideline implementation using the knowledge to action model: a mixed methods analysis of therapist performance triangulated with therapist and patient perspectives

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BACKGROUND. Effective strategies for implementing guidelines in physiotherapy practice are underdeveloped. Integration of established evidence into practice can be substantially delayed, leading to suboptimal care. Analyzing the impact of procedural knowledge translation models in varied practice settings is needed to develop actionable recommendations for implementation in real-world practice. We used the knowledge to action model, with emphasis on audit and feedback, to implement a single clinical practice guideline in five distinct physiotherapy settings.

AIMS. Our aim was to evaluate the impact of using the knowledge to action model to implement a guideline for physiotherapy care for patients with peripheral vestibular hypofunction in organizationally distinct physiotherapy practice settings.

METHODS. Five sites participated in this mixed-methods case series. Each site's therapists used the knowledge to action procedural modal to conduct a six-month multi-modal intervention (including audit and feedback, communities of practice, fatigue-resistant reminders, and local opinion leaders) to improve adherence to therapist-selected guideline recommendations. Therapist adherence to target practice behaviors, measured by chart audit pre and post intervention, was the primary outcome in our quantitatively driven analysis. Serially collected, independently analyzed, interviews and focus groups were coded to triangulate the impact of the intervention through the experiences of study therapists and their patients.

RESULTS. All sites showed a statistically significant improvement in therapist adherence to standardized health record documentation. Likewise, therapists made significant improvements in providing patients with physical resources (paper handouts, timers, metronomes) to support prescribed exercises. Implementation of high-tech resources and screening for and addressing symptoms of anxiety was not consistently improved. Eight themes provide insight into therapists' and patients' experiences. Therapists at sites with consistently improved adherence to target behaviors reported a strong sense of teamwork, mutual accountability, and desire for personal growth. Audit and feedback in monthly meetings supported the development of communities of practice and many therapists saw this as a key to success. Sites with therapists to who felt disconnected from the project goals and/or team had reduced adherence and reported more negative experiences. Patients valued when therapists inquired about daily exercise adherence, showed them measurable personal progress over time, and provided them with low-tech educational resources. Patients experienced symptoms of anxiety and depression associated with their vestibular condition and described relief with receiving empathetic education about their condition and encouraging perspectives on progress from their physiotherapist.

LIMITS. The case series nature of this study did not allow us to make quantitative inferences between sites.

CONCLUSIONS. The knowledge to action procedural model was effective for improving therapist adherence to a single clinical practice guideline in five organizationally distinct practice settings. Patients reported benefits from these efforts when therapists: addressed accountability to complete daily exercises, provided data to illustrate progress over time, and provided education and support in the face of anxiety and depression. Therapists found strong value in monthly audit and feedback provided in a collaborative setting. Sustained team-based efforts to improve guideline adherence often, but not always, created a sense of therapist comradery, accountability, and personal growth.

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58. Opportunities and challenges in communicating evidence to nurse leaders: experiences of online courses in Finland and China

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BACKGROUND. Using scientific evidence and embracing an environment of continuous learning are essential to modern health care services, and yet nurse leaders have been slow in adapting evidence in their own work. Decisions made by nurse leaders are often based on experience, intuition and personal views. This can lead to staff dissatisfaction, absenteeism, and high turnover. One of the key competencies among nurse leaders is the ability to understand the role of evidence-based knowledge, not only in clinical practice, but also in their own decision making. Therefore, nurse leaders should be equipped with evidence-based leadership competencies to perform their daily work.

AIMS. To describe the engagement of nurse leaders in evidence-based leadership course, as well as opportunities and challenges in communicating evidence to nurse leaders in Finland and China.

METHODS. Two randomised, parallel-group feasibility studies were conducted: one in Finland (N=140) and one in China (N=160). Nurse leaders were recruited from two hospital districts in both countries (four in total). Nurse leaders who fulfilled the eligibility criteria were randomly allocated (1:1) to participate either in online training using active learning methods and tutor support or in stand-alone online training (reading material only). The online learning course was free of charge to all participants. It included seven modules and aims to increase evidence-based leadership competences among nurse leaders in hospital settings. It was assumed that to lead teams toward their goals and to solve leadership or clinical problems, leaders need the best available evidence combined with good self-awareness, transparency, and highly internationalised morals.The pedagogical approach of the training course is based on Kirkpatrick's (1994) model, which is widely used to produce and assess learning outcomes with a focus on reaction, learning, and behaviour. The course structure, the length (7 months) and content were same in both countries.

RESULTS. In Finland, out of 140 nurse leaders invited to participate in the online course, 26 accepted the invitation and joined (18.6%). In China, 160 nurse leaders were invited and 118 joined the course (73.8%). After 5 Modules (out of 7 Modules), 19 nurse leaders in Finland were still part of the course (19/140, 13.6%; 19/26, 73%). Meanwhile in China, after Module 5, 29 nurses remained involved in the course (29/160, 18.1%; 29/118, 24.6%). In Finland, four (4) nurse leaders never accessed into the learning platform while the corresponding numbers in China was 5. At the beginning of the course, the participants in both countries perceived the course with great importance and expressed that they valued the course topics. Specific learning tasks and methods were seen as opportunities for nurse leaders to solve their current leadership problems based on evidence. However, even though the course tasks were integrated into their daily activities, the nurse leaders did not have enough time or energy to fulfil the course tasks during or in addition to their work. The evidence-based approach and the use of evidence in daily decision making were also seen as difficult.

LIMITS. Some limitations of these two feasibility trials were identified. Nurse leaders were not familiar with the online learning methods and their pedagogical requirements, although they had confirmed they were at the beginning of the study. The COVID-19 pandemic, a nurses' strike and high turnover rate among Finnish nurses were predominantly unforeseen circumstances at the starting point of the study. Later, nurse leaders in China faced the same obstacles than nurse leaders in Finland due to COVID-19 outbreak.

CONCLUSIONS. Although leadership styles might differ between Western and Asian countries due to differences in local cultures, languages, and treatment systems, similar opportunities and obstacles were identified during this learning and communication process concerning evidence-based leadership. In the future, possible differences in nurse leaders' styles in

communication, learning, self-initiative activities, and time resources available need to be considered more thoroughly in designing and conducting educational activities in health care settings related to evidence-based knowledge.

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59. Baseline imbalances in alirocumab and evolocumab trials: A meta-epidemiological study

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BACKGROUND. Randomization is a core feature of a clinical trial. The goal of randomization is to balance known and unknown prognostic factors relevant to the outcome of interest across the intervention and control group. Various trials testing alirocumab or evolocumab have reported baseline imbalances in favor of the drug group, but these were not adjusted for in the analysis. Quantitative assessment of baseline imbalances might identify seemingly small but systematic baseline imbalances that could have affected the estimated effects on LDL-C reduction and the risk of clinical outcomes.

AIMS. The aim of this study was to assess (1) the presence of systematic baseline differences in evolocumab and alirocumab trials, and (2) the relationship of baseline differences with efficacy and clinical outcomes.

METHODS. We performed a meta-epidemiological study. PubMed, Embase, regulatory reports, ClinicalTrials.gov and company websites were used to identify randomized trials that compared alirocumab or evolocumab with placebo or ezetimibe. Seven baseline characteristics (age with standard deviation (SD), gender, LDL-c with SD, BMI with SD, diabetes mellitus (DM), smoking, and hypertension) and five outcomes (LDL-c reduction, and the number of participants with major adverse cardiac events, serious adverse events, any adverse events, and all-cause mortality) were extracted for each treatment group. We performed four types of analyses. First, we described the range in baseline imbalances, and tested whether positive or negative imbalances were overrepresented with a sign-test. Next, we pooled the baseline imbalances and calculated the heterogeneity in baseline differences with meta-analysis. We then described the range in imbalances in SDs, tested whether positive or negative imbalances were overrepresented with a sign-test, calculated pooled SDs, tested the differences in SDs with Levene's test for each trial. Finally, we assessed the association between baseline imbalances and the effects on the outcomes with meta-regression.

RESULTS. We identified 43 trials with 63,193 participants including two clinical outcomes trials. Baseline age, sex and LDL-c were reported for all trials, but data on BMI, DM, smoking and hypertension was often not reported. Almost all trials showed baseline imbalances in all characteristics, and these were clinically relevant in many instances: e.g. the range in the imbalance of the proportion of males was -19.6% to 25.8% and that for the percentage of persons with hypertension -24.0% to 13.7%. The pooled differences were all small, and only baseline BMI showed a significantly lower mean for the drug versus placebo groups (MD -0.04;95% CI -0.05 to -0.02), which was determined by one clinical outcomes trial. Heterogeneity in the differences was higher than zero for almost all characteristics in the placebo and ezetimibe comparisons (range 0-50), and statistically significant four characteristics (males, BMI, DM, and hypertension) when combining these comparisons. There was a statistically significant preponderance for larger SDs in the drug compared to the control group (sign-test for SD age 0.014; for SD LDL-C 0.014; for SD BMI 0.049). For two characteristics, this was also reported for the clinical outcomes trials. Meta-regression showed clinically relevant relationships of imbalances in age, BMI and proportion of DM with the risk of any adverse events and the risk of mortality. Two of these associations were statistically significant: the effect of imbalances in BMI on the risk of mortality (beta -0.56; 95% CI -1.10 to -0.02), and the effect of imbalances in proportion of DM on the risk of any adverse events (beta 0.02; 95% 0.01 to 0.04).

LIMITS. A limitation of our study was that baseline data on BMI, DM, smoking and hypertension were often missing. Another limitation was that we did not correct for multiple-testing.

CONCLUSIONS. Despite randomization, many alirocumab and evolocumab trials showed clinically relevant and heterogeneous baseline imbalances, as well as systematically higher SDs in the drug than control group. The explanation for these findings should be investigated. Moreover, as some baseline imbalances were associated with the reported effects on

key outcomes, results of systematic reviews may be biased. Therefore, quantitative assessment of baseline imbalances should be investigated more often in systematic reviews of randomized trials.

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60. Evidence-based practice education and programmatic assessment

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BACKGROUND. In 2019, programmatic assessment was implemented in the curriculum of occupational therapy education in Rotterdam, starting from year 1. Programmatic assessment is based on a holistic view on assessment: decisions about success or failure are not based on one single test or judgement, but on series of performances on different moments and in different situations. Meaningful feedback, feedback dialogue and an iterative process of knowledge acquisition and skill development, in short learning cycles, are essential elements of programmatic assessment. With the new educational approach, we assume a more inquiring attitude and a more integrated use of EBP.

AIMS. To evaluate the current level of EBP competencies of occupational therapy students, after a curriculum change.

METHODS. To measure EBP knowledge and skills, the Dutch Modified Fresno test (DMF) will be used. In addition, a validated questionnaire on motivational beliefs towards EBP will be used. We invite 2nd year and 4th year students (before and after internship) to participate in the study. Scores of the 2023 student cohorts will be compared with students cohorts of the previous curriculum, that are available. Differences between groups will be tested with Mann-Whitney U test. Spearman correlation will be calculated for associations between Fresno scores and scores on motivational beliefs.

RESULTS. Results on the Fresno test and the motivational beliefs of 2nd-year and 4th-year students of the new curriculum will be compared with results of students of the previous curriculum (students yr 2: n=13, students yr 4: n=30).

LIMITS. Results will be preliminary since the first students that were educated in the new curriculum will complete their study in June 2023. In addition, results might be biased since participation in the study will be voluntary.

CONCLUSIONS. Programmatic assessment is an educational method that matches very well with EBP-education, since the focus is on methodological processes and asking questions. Measuring EBP knowledge and skills as well as motivational beliefs towards EBP of students is useful to evaluate if the current curriculum contribute to competent EBP practitioners. Based on the results of this evaluation, the feedback dialogue with students can be further tailored to improve EBP competency and attitude.

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61. Innovative Methods for Living and Rapid Evidence-Informed Clinical Advice During the COVID-19 Pandemic

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BACKGROUND. With the COVID-19 pandemic came an unprecedented, urgent need for harmonized and trustworthy clinical advice to dispel misinformation about the transmission, prevention, diagnosis, and treatment of SARS-CoV-2. Toward this end, and to reduce duplication of effort, the American College of Physicians (ACP) Scientific Medical Policy Committee (SMPC) partnered with evidence synthesis groups to establish and pilot methods for developing living, rapid practice points.

AIMS. To describe the methods, challenges, and impact of the ACP living, rapid practice points on COVID-19 and how lessons learned translate to living guidelines.

METHODS. To develop rapid practice points, the SMPC uses evidence from an independent systematic review, considers the balance of benefits and harms, public and patient values and preferences, and other contextual considerations, and seeks internal and external peer review procedures to ensure rigor and trustworthiness. All of the independent systematic reviews use the GRADE (Grading of Recommendations Assessment, Development and Evaluation) method to rate the certainty of evidence. Some practice points are maintained as living, with evidence surveillance and publication of surveillance reports and/or new versions.

RESULTS. ACP living, rapid practice points have focused on the prevention, treatment, and prognosis of COVID-19 in both the outpatient and inpatient setting. After applying our methodology to several practice points, we have identified key challenges and lessons learned.

LIMITS. To date, the rapid practice points have focused on COVID-19.

CONCLUSIONS. Well-received by our target audience, the ACP plans to continue to develop ACP living, rapid guidance across a wider range of topics for and beyond the questions related COVID-19. This will be an opportunity to implement solutions identified focusing on optimizing efficiency, ensuring appropriate resources, and evaluating dissemination strategies, as well as advancing methods clinical guidance that is rapid and/or living.

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62. Adapting evidence-based peri-discharge complex interventions for reducing 30-day hospital readmissions among Heart Failure and COPD patients in Hong Kong

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BACKGROUND. Avoidable 30-day hospital readmission is a key policy problem among health systems globally, including Hong Kong. Among all health conditions, heart failure (HF) and chronic obstructive pulmonary disease (COPD) are two leading causes for such readmissions. Effectiveness of peri-discharge complex interventions for reducing such readmissions among patients with HF or COPD has been synthesized in network meta-analyses (NMAs). However, as benefits of peri-discharge complex interventions may vary across health system contexts, evidence-based peri-discharge complex interventions should be adapted before implementation.

AIMS. To select and refine evidence-based peri-discharge complex interventions for reducing 30-day hospital readmissions among Heart Failure (HF) and Chronic Obstructive Pulmonary Disease (COPD) patients in Hong Kong public healthcare system context using GRADE Evidence to Decision(EtD) framework, based on local stakeholders' consensus.

METHODS. Two 18-participant panels were recruited to carry out a two-step process for both conditions separately. In Step 1, participants were invited to prioritize NMA supported peri-discharge complex interventions and suggest important combinations of different peri-discharge complex interventions for the two conditions, respectively. In Step 2, based on this priority list, participants were invited to conduct a two-round Delphi study for generating a list of consensus-based peri-discharge complex interventions for reducing 30-day hospital readmissions. GRADE EtD framework was used to guide the decision-making process, taking into consideration the following criteria: benefits, harms, values and preferences, equity, acceptability, and feasibility. After considering these EtD criteria comprehensively, participants were invited to make a recommendation on whether such intervention should be adopted in the Hong Kong public healthcare system. Agreement on whether to suggest or recommend the peri-discharge complex intervention was expressed in percentage. A cut off level of this study was set at 70% with reference to the agreement standard in existing Delphi studies. Qualitative comments explaining the decision made were also summarized.

RESULTS. Five and six out of ten peri-discharge complex interventions reached positive consensus for HF and COPD, respectively. Percentages of participants' agreement on recommending or suggesting these interventions ranged from 72.2% to 83.3% for HF, and 70.6% to 94.1% for COPD. For both conditions, over 80% of participants indicated that overall certainty of evidence for these interventions was low or moderate. Most participants were uncertain about the impact on health inequities resulting from implementing these interventions. However, more than 60% of participants agreed that these interventions were probably acceptable or acceptable, and the desirable consequences of these interventions probably or clearly outweighed undesirable consequences. Among the components across the two lists of peri-discharge complex interventions that reached positive consensus, case management, discharge planning, patient education, self-management, and telephone follow-up were common components, and were considered as core elements for reducing 30-day hospital readmissions among HF and COPD patients in Hong Kong. Preliminary implementation issues mainly included governance and leadership, financing, health workforce development, service access and readiness, as well as empowerment of patients and caregivers.

LIMITS. There are several limitations. First, purposive sampling of participants via the investigators' professional networks might induce researcher bias in the selection process. Nevertheless, we believe that the impact of researcher bias would be minimal, as the local stakeholders-endorsed peri-discharge complex interventions could not be established unless participants across all disciplines arrived at consensus. It is unlikely that researcher bias alone could foster consensus at a high cutoff level of 70% during the Delphi process. Second, the endorsed peri-discharge complex interventions were generated without involvement of patients and caregivers. Future patient and public involvement efforts are required for co-producing

intervention details as well as their implementation strategies. Their empowerment and involvement are consistently considered key determinants for implementation and clinical success.

CONCLUSIONS. This study has successfully applied the GRADE EtD framework for starting adaptation process of peri-discharge complex interventions and has established a list of local stakeholders-endorsed peri-discharge complex interventions for reducing 30-day hospital readmissions. Before scaling up these interventions in Hong Kong, further studies for improving intervention-context fit, and assessing real world implementation effectiveness are needed.

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63. Consumer Perspectives of Guidelines Implementation: Review of Consumer Contributions to Guidelines for Malaria

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Effective Basic Services (eBASE)

BACKGROUND. Applying systematic reviews evidence-based guidelines in hospitals requires a obviously defined shared decision-making process which takes into consideration patients' perspectives, best available evidence, and clinical expertise. However, patients are hesitant to accept new health technologies especially if it adds extra costs to their bills.

AIMS. To support clinicians in implementing evidence based clinical guidelines for treatment of simple malaria for children under 5 years of age in Cameroon using the JBI evidence implementation approach.

METHODS. Between July 2016 to present, eBASE Africa and the Ministry of Health in Cameroon are implementing an evidence implementation project to promote evidence-based care for children with simple malaria. Community health workers (consumer representatives) supported the procedure by developing evidence-based audits criteria, participating in audits and feedback process, developing behaviour change interventions through GRiP, and communicating with hesitant patients about uptake of new health technologies. Community health workers keep a diary of the progression to document consumer's contributions to healthcare. We reported on impact of the intervention on children under 5 years and experiences of CHWs in the evidence-based journey.

RESULTS. We compared compliance with best practice recommendations at baseline against a follow-up compliance at four months, following implementation of strategies identified. Compliance rates improved overall by 31 % (R: 20–42) for all criteria and sites, with differences noticed between sites. Nineteen barriers were identified, stratified into clinician, community health worker, patient and policy maker related barriers. Over 12000 simple malaria cases have been treated since 2017. CHWs have negotiated evidence uptake for 86 (n=123) patients referred.

LIMITS. None identified.

CONCLUSIONS. Effective evidence implementation can benefit from consumer representative involvement, engagement, and co-creation.

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64. Pre-operative pathway for the elective surgical patient at the IRCCS Azienda Ospedaliero-Universitaria di Bologna: a challenge to change professional behaviours

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BACKGROUND. In a hospital setting, it is not easy to overcome old professional habits. In the elective surgical context, the over-use of inappropriate or low value health care services is a relevant issue. Indeed, the process of preparing and defining a patient's peri-operative risk often follows a "path dependent" logic. Due to this logic, some services continue to be provided to the surgical patient despite their declared inappropriateness at the clinical level, generating waste that strongly impacts healthcare spending. At the IRCCS Azienda Ospedaliero-Universitaria di Bologna, the 6 different pre-existing pre-hospitalization pathways need an analysis of appropriateness, according to both clinical and organizational declinations, and to establish common and shared standards that can reduce organizational variability within the same healthcare facility.

AIMS. Relying on the Emilia Romagna Region's clinical practice guidelines about the "governance and standardization of preoperative pathways" and on the ESC guidelines on cardiology consultation, the project aims both to overhaul the routine preoperative tests for elective surgery (by reducing blood tests, diagnostic services, and consultation visits considered clinically inappropriate) and to streamline the entire pathway. Such inappropriate routine preoperative tests, in fact, often cause delays in determining anaesthesiologic eligibility for surgery, reducing the quality of the patient care experience by performing more outpatient visits and increasing waiting time. Moreover, many requests and consultations to be performed potentially causes increased patient risk (as for the radiobiological risk for chest Rx).

METHODS. Multidisciplinary groups were formed, composed of professionals with different roles in the preoperative phase: surgeons, anaesthesiologists, nurses, cardiologists and angiologists. These working groups were coordinated by an operations manager of the surgical area in collaboration with an anaesthesiologist experienced in preoperative surgical preparation, using a collaborative approach and constructive dialogue. The organizational effort wasn't to impose regional and national recommendations and key scientific evidence according to a top-down logic, but to introduce these recommendations within the real organizational context, with the support of all the professional actors who every day collaborate in the delivery of this healthcare service. For this purpose, an attempt was made to understand the clinical rationale and scientific evidence behind the tests deemed necessary by the multidisciplinary groups and not found in the clinical practice guidelines. Finally, all those that were potentially inappropriate and not supported by clear evidence from the scientific literature were addressed and eliminated from routine testing. After five months of analysis and discussion, a new procedure was drafted, outlining the new pre-operative pathway for the elective surgical patient. The document defines the new panel of health services (blood tests, diagnostic investigations and specialist visits) to be performed during the preoperative process.

RESULTS. The hospital, through the implementation of this new pre-hospitalization model, expects to achieve three key goals: - Improve clinic and organizational appropriateness and generate value for the patient, reducing overdiagnosis and shortening the time between the start of pre-hospitalization phase and the declaration of anaesthesiologic eligibility; - Specifically, as a result of the implementation of the new ESC guidelines, it is estimated that cardiology consultation requests will be reduced by 30%; - Increase the efficiency of the entire system with reduction of wasted resources (estimated savings of about 300,000 €/year).

LIMITS. There are several limitations that need to be considered. First, the natural organizational variability, due to the existence of 6 different pre-hospitalization centers, must be contained. This makes it difficult to control the consistent implementation of the procedure. Likewise, the existence of 5 different anaesthesia services, makes it more difficult to align all the human resources aimed at ensuring the effective operation of the new model. Therefore, it will be crucial, during the implementation phase, to conduct training meetings with all anaesthesiologists aimed at disseminating the procedure.

CONCLUSIONS. The revision of the preoperative pathway allows for improved dissemination and application of key scientific evidence, ensuring greater appropriateness, resource savings, and a reduction in patient waiting time, resulting in an improved experience of care. We believe that such a small change, can also lead to a reduction in hospital organizational entropy, resulting in a more lean, linear and standardized process that can ultimately bring greater value internally to the organization, as well as to the patient.

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65. Updating Evidence Informed Healthcare (EIHC) Tutorials using an Anti-Oppressive and Diversity Lens

Dawes Diana, Banihosseini Setareh, Dawes Martin, Felske-Durksen Cassandra, Gill Talveen, Jarus Tal, De Leeuw Sarah, Mackenzie Mark, Monell Chelsea, Price Roberta, Reid Linda, Remodo Carlea, Ross Cameron, Sham Ricky
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BACKGROUND. There are an estimated 476 million Indigenous Peoples worldwide. The Indigenous population in settler Canada is one of the largest among countries that share a similar colonial history. In 2021 settler Canada had an estimated Indigenous population of 1.8 million (5% of population). The colonial history of settler Canada has profoundly impacted Indigenous peoples, their health, governance, languages and cultures. The University of British Columbia acknowledges that, like other institutions, it has a problem of institutionalized, systemic and other forms of racism that affect Indigenous and racialized students, faculty and staff. There are calls to decolonize and indigenize the curriculum. Decoloniality 'implies the recognition and undoing of the hierarchical structures of race, gender, heteropatriarchy, and class that continue to control life, knowledge, spirituality, and thought, structures that are clearly intertwined with and constitutive of global capitalism and Western modernity' (Walsh, 2018). Whether working from feminist, critical, multicultural, queer or other perspectives, there appears to be agreement that oppression is a situation or dynamic in which certain ways of being are privileged in society while others are marginalized (Kumashiro, 2000). Broadening the ways, we conceptualize the dynamics of oppression, the processes of teaching and learning, is necessary when working against the many forms of social oppression that play out in people's lives. EIHC tutorials were developed in 2016 and updated in 2021 to provide a common resource for interdisciplinary healthcare profession trainees and educators. Anti-oppressive approaches to clinical practice have the same goals as EIHC i.e. the delivery of effective and safe patient-centered care. During the development of the modules and the update, feedback was gained from learners and educators. However, this process did not expressly review for anti-oppression (AO) pedagogies and the opportunity now presents to do so.

AIMS. The aim is to add appropriate inclusive language, approaches, resources, and tools into the EIHC tutorials so that learners can reflect on EIHC concepts and skills as they relate to underserved, oppressed, equity-seeking patients and care teams. Objectives Updating the EIHC curriculum consists of reviewing modules and addressing 1) Language: Change the language to reflect and acknowledge inclusion of, and challenges faced, by oppressed populations 2) AO Pearls: Add tips for prompting critical thinking and AO approach 3) AO Resources: Add tools and resources helpful to practitioners with specific oppressed populations 4) Tutor Manual: A guide to complement existing teaching materials 5) Course Preface: Add Module 0 as a preface and commentary on the evolving academic landscape at the intersection of EIHC and AO practice - this is not only consistent with, but a natural progression of EIHC clinical practice

METHODS. An interprofessional, expert team was recruited that includes, a) Indigenous persons b) Non-indigenous persons of colour c) LGBTQA2S++ representatives d) Anti-colonial methodology expert e) Justice, Equity, Diversity, Inclusion committee members f) Gender equity experts g) Resident resilience committee members. Each module is reviewed with an AO and diversity lens; primary reviews are synthesized into module content; module content is reviewed by the whole team; secondary reviews are synthesized into module content; new module content is reviewed by the whole team; online modules are edited. Module 0 uses the same process as the original modules: setting learning objectives, developing reviewing and modifying a virtual patient storyboard, producing and testing the modules. To be successful, collaboration and cohesion between those involved in the processes requires active relationship management.

RESULTS. The key points of Module 0, the number of changes and types of changes to the existing modules will be presented. Initial testing will be conducted with a small group of Family Practice residents and their supervisors to ensure technical aspects of the modules are working correctly and to identify issues needing adjustments. Further evaluation of the impacts of the modules on learning, including AO and diversity competencies, will be ongoing.

LIMITS. A limitation to the plan of using inclusive language and approaches is the beliefs and attitudes amongst learners, peers, educators, and administrators. Due to funding and time restrictions, there are limitations to the changes that can be made to the original modules, preferentially the modules would have been written using an AO lens from the start.

CONCLUSIONS. These modules seek to address an identified research-to-practice "gap" in EIHC learning, which was identified by educators wanting to use the tutorials. This project is adopting a collaborative, and interprofessional approach in modelling an anti-oppressive and diversity lens update.

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66. Mapping the landscape of the evidence on social isolation in the older population in aged care using scoping review and environmental scan methodologies

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BACKGROUND. The Aged Care Research & Industry Innovation Australia (ARIIA) is an initiative of the Australian Government to address the future of the aged care sector in Australia. It aims to improve aged care workforce capability and capacity by embedding evidence-based practice principles across the aged care sector. ARIIA has created a Knowledge and Implementation Hub (the Hub) which is a technology portal and a 'one-stop-shop' access to research evidence and quality resources, on priority topics based on a sector survey. Social isolation (SI) was identified as one of the priority topics along with dementia, mental health and wellbeing, to list a few. SI is a public health issue and significantly impacts health and well-being negatively, particularly the older population group. SI and feelings of solitude are stressful events that are conducive to generalised anxiety. It increases the risk of morbidity and mortality. with the risk similar to that of smoking. It results in poorer health (higher blood pressure, cardiovascular disease and inflammation).

AIMS. We aimed to explore the available evidence and resources on social isolation among the older adults in aged care settings to map the current landscape about the topic and develop informative content for the Hub to support the aged care workforce.

METHODS. We used the Arksey and O'Malley and JBI Frameworks for scoping review to guide this review. We developed and applied a systematic search for systematic reviews in five relevant databases (PubMed, Social Science Premium Collection, Psych Info, CINAHL and Emcare), and an environmental scan for resources available via Google Advanced searches, on social isolation among older population in aged care in the last ten years. The systematic database search was inclusive of all published reviews whilst the search for resources was limited to the Australian setting for applicability in the Australian context. We used the eligibility criteria to guide the screening and extraction of articles for the scoping review, which were done in duplicate. Counts, tables and narrative summaries were used to present the findings. We also created evidence themes on common ideas arising from mapping the findings of the scoping review process. Resources identified were mapped against the evidence themes. Additionally, links to one-click PubMed searchers for each evidence theme and tags for filtering information were developed. The final version of an evidence theme consisted of a summary of evidence from the systematic review/s, links to all possible resources to guide the delivery of quality and safe aged-care service, and one-click PubMed searches, presented in a simple and easy to understand format.

RESULTS. We found 11 systematic reviews with relevant information on social isolation in this population group. Eight reviews were on interventions for (n=8), and health impacts of (n=5), social isolation. Common interventions reported were use of information and communication technology, reminiscence therapy, activity programs, social connectedness and support group interventions. Loneliness, mental health conditions, depression and anxiety, and poor life satisfaction were the common health impacts identified. Evidence themes were produced for aged care staff on common interventions identified. Twenty-six resources on SI were found which mostly focused on awareness and information about SI, links to services for the older population to be connected to family and friends, and use of technology to stay connected with people and the community. Evidence themes and resources are now available via ARIIA's Hub pages.

LIMITS. As this is a scoping review of the literature intended to map the extent of published systematic reviews, we do not intend to synthesise and make recommendations for best practice. Only systematic reviews were the main document source for this scoping review to determine the available literature based on the highest level in the hierarchy of evidence.

CONCLUSIONS. Systematic reviews on social isolation focused on interventions and health impacts of social isolation. Effectiveness of interventions need to be explored in future research with specific focus on how, for whom, and what context

they will work. A number of resources are available for the Australian setting to help prevent negative impacts of social isolation in this population group.

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67. Equipping Ghanaian physiotherapists in evidence-based practice to promote patient-centered care: report of an educative training and stakeholders' engagement

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BACKGROUND. Osteoarthritis and age are associated with high sarcopenia risk. Exercise as well as other nonpharmacological interventions are effective treatments for muscle function in elder people with lower-extremity osteoarthritis (LEOA). The relative effects among various exercise interventions for preventing sarcopenia in LEOA remain unclear.

AIMS. This study aimed to investigate the relative effects of various exercise intervention types on sarcopenia indices in older patients with LEOA.

METHODS. The present study was conducted according to the guidelines recommended by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis35 and was designed based on the previous study.17 The protocol of this systematic review had been registered in the PROSPERO registry (CRD42019125118). We performed a comprehensive electronic search of online databases, namely PubMed, EMBASE, CINAHL, the Cochrane Library, the Physiotherapy Evidence Database (PEDro), the China Knowledge Resource Integrated Database, and Google Scholar, until January 2020 to identify relevant articles. Randomized controlled trials (RCTs) that reported the effects of exercise on muscle mass gain for LEOA were identified. No limitation was imposed on the publication year or language. The included RCTs were analyzed through meta-analysis and risk of bias assessment. Inverse-variance weighted multivariate meta-regression was performed to explore the associations of muscle mass gain with clinical outcomes.

RESULTS. We included 25 RCTs with a median methodology-quality score of 7/10 (range, 3/10 to 8/10). Exercise exerted significant effects on muscle mass (standard mean difference [SMD], 0.77; 95%CI, 0.51?1.03). Meta-regression analyses showed that changes of muscle mass are significantly associated with SMDs of pain (β = 0.15, P = 0.03), muscle strength (β = 0.09; P < 0.001), walk capability (β = 0.20; P = 0.03), and global function (β = 0.08; P = 0.04), controlling for age, body mass index, methodological quality, and follow-up duration.

LIMITS. The present study has several limitations that should be considered. First, because of different exercise regimes (exercise type, training duration, training volume, and muscle activation mode), it was difficult to provide a definite conclusion for the effect of a specific type of exercise on muscle mass gain. Second, some of the included RCTs had small sample sizes; thus, results of these studies that reported no significant treatment effect on lean mass or muscle CSA may contribute negative effect size to the overall result. Third, inadequate statistical power for subgroup analyses was noted. Most subgroups included a small number of RCTs (less than 6), which may not have adequate power to detect a difference among subgroups; the results of such subgroup analyses should be interpreted cautiously. Finally, most of the included RCTs examined outcomes within 6 months immediately after the intervention whereas 4 RCTs only had a long-term follow-up duration ranging from 15 to 18 months after the end of intervention. Thus, whether treatment effects lasted for a longer period (i.e., 6–12 months after exercise intervention) remains unclear. Additional studies evaluating the effects of exercise on older patients with LEOA should be conducted with a medium-term follow-up of 6 months or a long-term follow-up of 12 months after the completion of exercise intervention.

CONCLUSIONS. This study provides evidence that exercise is beneficial for muscle mass gain as well as clinical outcomes in older adults with LEOA. In addition, the results of this study showed that sex and intervention designs (i.e., training mode) have influences in treatment efficacy. Furthermore, muscle mass gains in response to exercise were associated with treatment effect size of pain reduction, muscle strength and walk capability improvement, and global function recovery. Therefore, we concluded that exercise may exert effects to offset muscle attenuation or prevent sarcopenia in older

individuals with LEOA. Based on the limitations of our current study, there is a need for additional studies with larger samples as well as for identification of a specific exercise protocol. Keywords. osteoarthritis, sarcopenia, physiotherapy, injection, function outcome

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68. Citizens Participation in Evidence Translation and Communication in Cameroon: How Can technical Files Keep Track of Citizens Contributions

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BACKGROUND. Communicating scientific evidence to citizens in settings with low literacy rates or to non-scientific communities is challenging as scientific jargons may be too complicated for public consumption. Researchers tend to speak to themselves through journals, conferences, and other scientific platforms, leaving out the public for whom research is intended. This could lead to significant research waste and research to implementation gap.

AIMS. To use citizens participation technical files in facilitating and tracking citizens participation in evidence translation and communication to non-literate and non-scientific communities in Cameroon

METHODS. Patients and patient representatives were recruited from 3 health districts in the NW region of Cameroon. Patient and patient representatives participated in 3 sessions each to select and prioritize health outcomes through a DELPHI II consensus approach for 2 separate health conditions (Malaria and COVID-19). Following a rapid evidence review for best available evidence, the plain language summaries were then used to produce evidence statements for local storytellers. A technical file was then developed together with patients representatives for replicability and tracking of patients contributions. The technical file highlighted research recommendations, quality, cost, and impact of research recommendations. It also highlighted what to consider when using storytelling for research communication to non-literate and non-scientific communities.

RESULTS. 68 patients and 9 patient representatives have contributed to development of 2 technical files and 8 stories for evidence communication (3 malaria and 5 COVID-19 stories). knowledge of malaria disease increased by average 67.23% [R: 23-98]; knowledge of malaria prevention methods increased by 46.12% [R: 36-61]; increase in knowledge of COVID-19 increased by 32.10% [R: 5-39%]. We identified barriers to uptake of research evidence for malaria Artemisinin Combined Therapy (13), COVID-19 preventive methods (18).

LIMITS. This study looked at a cohort of pilot intervention for malaria ad COVID-19. An evaluation at scale with an experimental evaluation will be useful.

CONCLUSIONS. To ensure global equity in evidence translation and uptake and decolonization of approaches for evidence synthesis, it is important to explore, evaluate, and promote effective approaches of evidence translation and communication to non-literate communities especially in the global south; as well as non-scientific communities globally. This approach should be systematic, rigorous, and replicable. Using technical files for this purpose within storytelling is a promising approach.

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69. Teaching methods for developing critical thinking in health education in children and adolescents – scoping review of qualitative and qualitative studies

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BACKGROUND. One of the fundamental public health challenges in the 21st century is the improvement of people's health literacy (WHO 2018). Health literacy refers to an individual's ability to seek, understand, and use health information. The key issue in educating HL is to develop the skills of critical thinking and both should be developed at school age. In the scoping review we focus on the concept of health literacy and critical thinking as the one of its main dimensions.

AIMS. To review teaching methods or pedagogical interventions used in empirical studies focused on the development of critical thinking in regard to health and implemented by teachers in preschools, primary or secondary schools (ISCED 0, 1, 2, 3).

METHODS. This scoping review considered any type of empirical studies, such as qualitative and quantitative studies which focused on development of critical thinking with regard to health, i.e. in the framework of health education or subjects with content related to health or health education (biology, chemistry, science, physical education, wellness, sexual education, health education, digital education, math, critical thinking as subject) and which provided information about teaching methods or training activities or pedagogical interventions implemented by teachers or other educators or schools, in preschool, primary or secondary schools. We searched Medline (via Ovid), Embase, Science Citation Index with Abstracts (Web of Science), ERIC, ProqQuest, PsycArticles, CINAHL, and sources of grey literature. Pairs of reviewers independently selected studies on the basis of titles and abstracts and extracted the data. Due to heterogeneity in interventions and inadequate reporting of results, we performed a descriptive synthesis of studies.

RESULTS. A total of 11801 records was initially identified. After removing duplicates, checking title, abstract and full text, 968 were found potentially eligible on the basis of title and abstract. Among them 229 studies (24%) were excluded because they did not take into account the development of critical thinking. Other studies were excluded due to being only theoretical (171), not addressing population of interest (163) or not addressing health literacy (122) or not providing information about the teaching methods used (90) and other reasons (87). Finally, we included 100 studies met the eligibility criteria and described teaching methods used, but the majority (80%) of them did not examine the effectiveness of the teaching methods/interventions used in their study, just simply described

LIMITS. The review focused on the interventions conducted within school environments and excluded those organized by external bodies.

CONCLUSIONS. The development of critical thinking within the health education in children and adolescents is not commonly addressed in the interventions used in empirical studies. The evidence on the effectiveness of the teaching methods or pedagogical interventions used in the development of critical thinking is limited due to the fact that the majority of studies did not examine the effects of the implemented interventions.

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70. Let's learn from our readers: qualitative study on lay and professional audiences' perception of different formats of information on the effects of health interventions

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BACKGROUND. The increased acceleration of antiscientific movements, mistrust of official information, and circulation of fake news observed in recent years have made the flow of information even more demanding. To face those challenges, it is crucial to develop participatory attitudes in the academic community and support medical professionals in educating their patients. Translating scientific findings into plain language and understanding the preferences regarding various information formats among lay people is equally important for stimulating optimal dialog between all parties.

AIMS. We aimed to gain an in-depth understanding of how the various types of audiences perceive the available formats for presenting data from Cochrane systematic reviews.

METHODS. We conducted focus group interviews with lay people and medical professionals. Participants were presented plain language summary (PLS), an audio record of the PLS, summary of findings table, vlogshot, blogshot, infographic, press release, comic drawing, and scientific abstract and were encouraged to discuss their usability.

RESULTS. The following characteristics of the presented information emerged as important to the study participants: trustworthiness, practical application, comprehensibility, information structure, graphical means used, clarity, as well as individual reactions and interpretations. Our study revealed that the way the information is presented, the perceived quality of the underlying studies, and individual benefits are considered by recipients when evaluating the various information formats.

LIMITS. The peculiarity of some of the interventions presented in the materials might have influenced the reception of the formats themselves.

CONCLUSIONS. Our study revealed that the way the information is presented, the perceived quality of the underlying studies, and individual benefits are considered by recipients when evaluating the various information formats.

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71. Evaluating the impact of Management of child health services education in Uzbekistan: Evidence based guidelines for process evaluation

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BACKGROUND. Uzbekistan primary care is achieving improvements in quality of and child health care, despite limited resources. There has been evidence of progress in recent years. Implementing evidence based guidelines in service training is the cornerstone for improving general practitioners' skills. EBM is a comprehensive tool to support clinical decision making by using evidence for improving child health services. It is defined as "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. Practising EBM aims at integrating individual clinical expertise with the best available external clinical evidence from systemic research and patient values. The Ministry of Health developed a national policy on quality improvement in Uzbekistan. In 2004, the Centre for Evidence-Based Medicine was set up at the Tashkent Institute of Postgraduate Medical Education. National standards for diagnosis and treatment and clinical protocols for primary health care were developed by specialists from the Centre for Evidence-Based Medicine. These clinical guidelines are valuable and reliable resources both for the GPs' training and their daily work. To understand the power of training and how well its meeting the trainees' needs, the process of teaching must be measured and evaluated. Traditional continuing medical education programs that offer passive learning have been shown to be poorly effective at changing doctors' clinical behaviour. In Uzbekistan, no study thus far has examined the association between the teaching of EBM principles and doctors' clinical behaviour following evidence based guidelines. EBM courses conducted at the largest GPs' group are designed to facilitate a change in doctors' attitudes, knowledge and clinical behaviour.

AIMS. The aim of this study was to evaluate the efficacy of 5-day postgraduate EBM courses for GPs working in SVPs (rural health clinics), to assess the progress towards achieving training programme objectives, to analyse problems and select the most valid interventions from a set of options, in order to improve skills in the management of childhood diseases at primary health clinics following the implemented evidence based guidelines.

METHODS. All courses were conducted in the department of Public Health and Healthcare Management at Tashkent Institute of Postgraduate Medical Education. EBM programmes and training materials were developed, and 5-day seminars were held. 728 general practitioners from 14 regions were trained every month between September 2021 and January 2022. The study evaluated the acquired competency pre test (before training) and post test (after training), and measured the primary outcomes of knowledge, appraisal skills, and changing GP attitude with attention to following the clinical practice guidelines. Child health is one of the core conditions covered by the Uzbek primary care package. The list of indicators, based on the guidelines, includes the most essential and prioritized ones, which demonstrate the skills of GPs to assess sick children, their ability to determine treatment and to prescribe medications. In addition, introduction of principles of EBM in the framework of implementing guidelines allows to explain its content and increase substantially the participants' knowledge in child diseases.

RESULTS. All outcomes were measured before and after the seminars, and evaluation done after 15 months. Efficacy evaluated by using questionnaires to assess knowledge, skills, attitudes, and the intention to apply EBM and to follow recommended guidelines. All posttest participants scored on average more than 80%, which is encouraging and shows the effectiveness of the training. There were substantial changes in the level of knowledge acquisition - up to 90%; the effect of the training on changing attitudes to using EBM principles and recommended guidelines' - up to 68%. We evaluated the effect of the seminar on GPs' clinical performance after training. Interactive seminars are more effective for changing behaviours and essential for ensuring that they maintain and learn new skills and competencies. The most notable improvement among participants was in infection prevention and diarrhoea management in children under 5, as shown by four quality of care outcome measures. Analysis of outcomes data showed that many GPs applied the skills obtained in the practical work, but did not always implement them according to the guideline strategy. After taking the EBM course, some of participants believed they were better able to interpret published valid clinical evidence but not better able to apply those

results to the care of individual patients. The challenges are the lack of appropriate conditions, the effect of time and financial constraints, lack of equipment and the absence of an effective computer system. A passive attitude, and lack of motivation and willingness means that they do not introduce the new approaches in their daily practice.

LIMITS. EBM teaching has a positive impact on health providers' care. Questionnaires have been shown to be useful in assessing the knowledge and skills of participants. Barriers to implementation of EBM into practice are the lack of resources to provide access to reliable sources of information, such as websites; outdated methodology in medical education; lack of skills to perform searches for scientific data, to evaluate their validity and to transform scientific data into practical solutions, which is necessary for health workers in their daily activities. In addition, we did not assess how EBM teaching improves performance in the clinical setting. There is a need for further follow-up assessment and monitoring of trained groups of GPs to assess the effectiveness of educational intervention in reducing child morbidity and improving outcomes. Future larger-scale interventions must be incorporated into the routines of the organisation, thus minimising barriers towards EBM implementation.

CONCLUSIONS. In summary, we suggest these seminars can significantly improve EBM knowledge and increase the use of guidelines and evidence based resources by GPs. Future studies are needed to clarify the impact of EBM teaching in improving clinical performance or patient outcomes. The experience showed that simply training health workers does not guarantee application of the skills gained in practical work. However, the quality of the services can be improved even without considerable financial resources following evidence-based guidelines. There should be more attention to the implementation and dissemination of the guidelines and focus on GPs adherence to that.

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72. Equipping Ghanaian physiotherapists in evidence-based practice to promote patient-centered care: report of an educative training and stakeholders' engagement

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BACKGROUND. The global drive for quality patient-centred care has increased the reliance on Evidence-Based Practice (EBP), yet its practical realization remains a big challenge amongst many Ghanaian physiotherapists. Although physiotherapists are aware of EBP, majority lack adequate knowledge to incorporate it into practice. In response to these observations, Ghana Physiotherapy Association (GPA) launched two EBP initiatives; GPA Evidence Updates and GPA Evidence Database to provide accessible and quality research evidence to inform EBP. Despite such efforts, the uptake of these initiatives was poor, and many physiotherapists still demonstrated limited understanding of how to engage in EBP to promote quality patient-centered care. Team training was needed to equip Ghanaian physiotherapists with essential EBP skill set to encourage the use of the EBP initiatives, promote the EBP culture and improve patient-centered care.

AIMS. 1. Advance the knowledge, build capacity, and equip Ghanaian physiotherapists with the skill set in EBP. 2. Evaluate the impact of workshop training and explore experiences of learning by Ghanaian physiotherapists

METHODS. A team training approach with embedded stakeholders' engagement activities was employed. This two-day workshop involved a series of presentations, practice-based learning activities, and expert panel discussions. Workshop day-1 explored the theoretical concept of EBP to deepen participants' understanding and day 2 involved hands-on EBP skills training. The impact of the workshop and Ghanaian physiotherapists knowledge of EBP was evaluated before and after training with the EBP questionnaire (EBPQ). Using an open forum discussion, challenges of engaging in EBP and recommendations to address these challenges were explored. Experiences of learning was evaluated through stakeholder engagement activities. Questionnaire data was analysed with Microsoft Excel and Stata (Paired T-test), and text and notes were analysed thematically.

RESULTS. The workshop was attended by 39 licensed Ghanaian physiotherapists. Of the 39 participants, 29 provided data for evaluation. Majority of participants were females (60.0%) between 30 and 39 years. Participants were largely senior physiotherapists (31%), principal physiotherapists (27.6%) and basic physiotherapist (24%) with few physiotherapy managers (10%). For EBPQ subscales, significant ($p<0.001$) increase in perceived practice (28.0±6.9 to 37±6.1), attitude (20.0±6.3 to 26±3.4) and knowledge (66.0±6.3 to 85±8.1) scores were observed after training. Significant ($p<0.001$) increase in overall EBPQ scores (114.0±12.7 to 149±15.2) was also seen after training. Results suggest significant impact of training on physiotherapists' overall knowledge, attitudes, and potential use of EBP in clinical practice. From the open forum, physiotherapists identified "deficient knowledge", "inadequate support and resources", "insufficient training", "financial constraints" and "limiting cultural values" as barriers to engaging in EBP. As recommendations to address these challenges, "continuous education", "advocacy", "positive work culture" and "provision of support" were highlighted by participants for consideration.

LIMITS. N/A

CONCLUSIONS. The training workshop was impactful and improved Ghanaian physiotherapists' knowledge of EBP. Physiotherapists demonstrated learning and willingness to incorporate EBP into clinical practice to improve patient-centered

care. Service evaluation and clinical audits are needed to explore Ghanaian physiotherapists' integration of EBP knowledge into practice, and for the successful integration of EBP into Ghanaian physiotherapy practice, continuous training and access to resources are required.

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73. Re-Designing Long-term Care Policy from a Systems Thinking Perspective in the Post-Pandemic Era

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BACKGROUND. Critical issues in health services and policy have been brought to the forefront in the wake of the COVID-19 pandemic. The current debate about the tragedies in long-term care facilities across Canada is an eye-opener for rethinking our mental models in how we apply health service and policy interventions, particularly when the context and settings for implementation differ. Evoking a mental model on how things are connected within some notion of the whole system is a useful way to understand the interactions and interdependencies within and between the multiple levels of interventions to improve people's health. The Ontario Long-Term Care COVID-19 Commission Final Report (Ontario, Canada) emphasized that the failings in the long-term care sector during the COVID-19 pandemic resulted from long-standing systemic failings in government policies and governance.

AIMS. Our aim is to synthesize evidence in making the case that the key to rectify systemic problems starts with thinking in systems terms.

METHODS. We have conducted a literature review in order to gain a general background on the issue in light of the Ontario Long-Term Care COVID-19 Commission Final Report (Ontario, Canada).

RESULTS. It is evident that the problems of the long-term care crisis in Canada cannot be solved by more privatization, more regulation and greater efficiency, all of which have contributed to the fundamental causes of the crisis in long term care.

LIMITS. We did not utilize a systematic literature review.

CONCLUSIONS. Governments must lead the redesign of an overarching systemic policy framework that reconciles the interdependencies, values, and priorities amongst the sector's different stakeholder groups. Achieving a shared purpose and value agreement towards a new relational model of shared responsibility in fostering high quality outcomes is the basis for the successful redesign of an effective and efficient Long Term Care sector in Ontario, Canada. This will allow the system to move towards patient and public involvement in health and social care. Such a redesign can provide evidence translation for other jurisdictions so as to draw from lessons learned towards systems improvement in the post-pandemic era.

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