Rapid Evidence Profile #32

Executive summary

Question
- What are the characteristics of living evidence syntheses (LESs) currently available about public-health issues?

Context
- LESs refer to an evidence synthesis that is updated on a regular timeline that is appropriate to the topic being addressed (e.g., some topics may have a short update interval because new evidence that needs to be included is expanding rapidly, while longer intervals between updates may be used when new evidence is not emerging as rapidly)
- Maintaining LESs ensures that the best available evidence is always up-to-date and can therefore be used to dynamically respond when:
  o context shifts (e.g., market-based solutions rise to prominence on government agendas or mpox spreads to non-endemic countries), which may change the applicability of the evidence
  o issues evolve (e.g., government attention turns to different target populations, interventions, comparators, outcomes or time horizons, or a new outbreak occurs), which may change the framing of the question and presentation of the findings
  o evidence is produced rapidly (e.g., more fit-for-purpose study designs come into use or new innovations emerge that have not previously been studied), which may change conclusions

Key findings
- We identified 52 LESs and 18 protocols for future LESs that address public-health issues
- Almost all of the LESs address topics related to COVID-19, and the four not focused on COVID-19 examine:
  o climate and health (a machine learning/enabled evidence synthesis)
  o test accuracy, surveillance and association of screening procedures for prostate cancer
  o association of e-cigarette substitution with cardiovascular conditions
  o interventions for increasing fruit and vegetable consumption in children aged five years and under
- We also identified 20 highly relevant COVID-19 LESs (in the sense that they continue to be updated and/or address topics that continue to be relevant), which focus on:
  o vaccine effectiveness for adults, children and adolescents and over time
  o effectiveness of seven public health and social measures (masks, quarantine and isolation, ventilation, physical distancing, reduction of contacts, hand hygiene and respiratory etiquette, cleaning, and disinfecting), as well as two LESs that examine combinations of and adherence to these measures, in preventing transmission of COVID-19 and other respiratory infectious diseases in non-health care community-based settings
  o epidemiology of and risk factors for COVID-19 infection in health care workers
  o interventions for preventing and treating COVID-19
  o role of daycares and schools in COVID-19 transmission
  o seroprevalence of SARS-CoV-2
  o COVID-19 in pregnant women
  o accuracy of novel antigen rapid diagnostics for SARS-CoV-2
  o socioeconomic impacts of and care models for people living with post-COVID condition

Possible future work
- We are currently exploring the possibility of developing an approach that would assist a public-health agency in deciding whether to 'trigger' the start of or an update to either a living contextualized evidence synthesis (that it could use directly) and/or a living global public good (that it and other agencies could draw upon across a range of future contexts and issues and that would constitute part of its contribution to a more coordinated global evidence architecture)
- In doing so, we will draw on data we have collected about living evidence products published since 2020.

Question

What are the characteristics of living evidence syntheses currently available about public-health issues?

What we found

We organized our findings about the characteristics of living evidence syntheses according to three frameworks provided below.

Organizing framework

Framework for documenting characteristics of living-evidence syntheses

- Ascertainment of 'living' condition
  - Self declared in at least one of the publications (protocol, original review or updates)
  - Not explicitly declared, but:
    - Updates are available
    - Authors flag that updates might be available
    - 'Living' condition was confirmed by authors
- Status of LES
  - Underway with as yet no publication (protocol or title is registered but first version has not yet been published)
  - At least one publication/update is available with potentially (not announced otherwise) more to come
  - At least one publication/update is available with a clear schedule for at least one more to come
  - The last version has been already published (no longer living)
  - No longer available (living or non-living version)
- Type of synthesis
  - Protocol (no first edition available yet)
  - Rapid review of effects (without meta-analysis)
  - Rapid review addressing other types of questions
  - Systematic review of effects (without meta-analysis)
  - Systematic review addressing other types of questions
  - Meta-analysis
- Type of publication as per most recent update
  - Protocol or title registration only available (e.g., in PROSPERO)
  - Pre-print server with no scientific journal publication (yet) identified
  - Scientific journal only

Box 1: Our approach

We identified evidence addressing the question by searching: 1) COVID-END inventory; 2) HealthEvidence; 3) Health Systems Evidence; 4) NCCMT Repository of Public Health Evidence Syntheses; 5) Medline and PubMed; 6) EMBASE; 7) Cochrane Library; and 8) Web of Science. In the COVID-END inventory of best evidence syntheses, we searched all syntheses, filtering by public-health measures and using search terms that could capture the word "living" or "update". In the other databases we used an adapted version of the following search based on the search functions in each: (living or live).mp. adj 4 (reviews or review or evidence or synthes* or meta-analy* or metanaly* or "meta analysis" or "meta analyses" or map or maps or overview* or SR).mp. All searches were conducted on 2 August 2022.

We searched for self-declared living evidence syntheses, evidence syntheses that had multiple updates (or planned updates that might become available), or evidence syntheses where the 'living' condition was confirmed by authors. Once identified, one of the authors ensured the most up to date version of the living evidence synthesis had been included.

We included appraisals of the methodological quality of the evidence syntheses using AMSTAR when they were available from existing sources (e.g., COVID-END inventory). Note that quality appraisal scores for rapid evidence syntheses are often lower because of the methodological shortcuts that need to be taken to accommodate compressed timeframes. AMSTAR rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. It is important to note that the AMSTAR tool was developed to assess evidence syntheses focused on clinical interventions, so not all criteria apply to evidence syntheses pertaining to delivery, financial or governance arrangements within health systems or to broader social systems. We appraised the quality of the highly relevant guidelines using three domains in AGREE II (stakeholder involvement, rigour of development, and editorial independence) and classified guidelines as high quality if they were scored as 60% or higher on each domain.

- o Website only
- o Combination of product(s) and website
- Type of question
  - o Benefits
  - o Harms
  - o Costs
  - o Views and experiences
  - o Acceptability
  - o Test accuracy
  - o Surveillance
  - o Association
  - o Prevalence or incidence
  - o Other
- Date of last search
- AMSTAR score:
- Includes risk of bias assessment or other form of quality appraisal
- Availability of GRADE evidence profile (in the last update), excluding protocols
- Additional LES data to document [to entered in a spreadsheet with open field instead of categorical variables]
  - o Number of updates completed
  - o Mean time between updates
  - o Mean number of new studies assessed for possible inclusion per update
  - o Mean number of new studies included

Framework for documenting public-health functions, populations, and features of public-health systems
- Essential public-health functions (policy and program interventions)
  - o Health surveillance
  - o Population health assessments and interventions (including social determinants of health)
  - o Health protection (e.g., AMR, climate-change impacts, environmental and public health inspections, immunization, screening)
  - o Health promotion (e.g., advocacy, behaviour modification, education/awareness/skill development, social support)
  - o Disease and injury prevention (e.g., chronic diseases, dental health, mental health and substance use, physical activity, sexually transmitted infections, and opioid use)
  - o Emergency preparedness and response
- Population focus for public-health functions
  - o Age-based groupings
    - Infants (0-1 years)
    - Preschool aged (1-4 years)
    - Grade school aged (5-12 years)
    - Adolescents (13-19)
    - Adults (20-59)
    - Seniors (60+)
  - o Other groupings
    - Female
    - Male
    - Low socioeconomic status
    - Family
    - Indigenous peoples
- 'Public health' system features
  - o Governance arrangements (governance, leadership and engagement)

- o Financial arrangements (financing)
  - o Delivery arrangements
    - ▪ Workforce expertise and human resource capacity
    - ▪ Medical and digital health technology
    - ▪ Evidence, knowledge and information
- Settings of delivery
  - o Commercial
  - o Community
  - o Correctional institution
  - o Daycare
  - o Farm
  - o Healthcare
  - o Highways
  - o Home
  - o Religious institution
  - o Residential centre
  - o Rural/remote
  - o School
  - o Worksite

Framework for documenting living-evidence syntheses with equity-relevant evidence
- Focus on one or more equity-deserving groups from PROGRESS-Plus framework
  - o Place of residence
  - o Race/ethnicity/culture/language
  - o Occupation
  - o Gender/sex
  - o Religion
  - o Education
  - o Socioeconomic status
  - o Social capital
  - o (plus) Personal characteristics associated with discrimination and/or exclusion (such as age, disability), features of relationships (e.g., young caregivers) and time dependant relationships (e.g. recently discharged from hospital, released from prison)

We identified 70 living-evidence syntheses about public-health issues, which include:
- 19 evidence syntheses which include a meta-analysis
- 14 evidence syntheses of effects (without a meta-analysis)
- 13 evidence syntheses addressing other questions (without a meta-analysis)
- One rapid evidence synthesis of effects
- Five rapid evidence syntheses addressing other questions
- 18 protocols

We outline in narrative form below our key findings related to the question. We provide additional details in Table 1 about the type and number of living-evidence syntheses included and the public-health functions and public-health system features that they cover. An excel sheet that contains the detailed coding across the three organizing frameworks for each of the living-evidence syntheses identified is available in Appendix 1, which is available here.

Key findings from highly relevant evidence sources

All but four of the living evidence syntheses identified focus on topics related to COVID-19. The non-COVID-19 living evidence syntheses examine global research on climate and health (through a machine learning review), test accuracy, surveillance and association of screening procedures for prostate cancer, the association of e-cigarette substitution with cardiovascular conditions and interventions for increasing fruit and vegetable consumption in children aged five years and under.

Key findings related to the characteristics of living evidence syntheses

All but two of the 70 syntheses self-declared their 'living' status within the protocol or methods section of the review. The status of the syntheses that did not self-declare was confirmed by the authors that it was their intention to provide regular updates and/or that updates were available. All but one of the living evidence syntheses were started in or after the year 2020, and the living evidence syntheses varied in their place of publication between protocol registrations (n=17), scientific journals (n=31), websites (n=15), or published in a combination of places (n=7). Though the primary focus of the questions included in the evidence syntheses related to one of benefits (n=33), harms (n=27) or prevalence and incidence (n=26), many syntheses also included secondary and tertiary questions which could not easily be categorized and were therefore classified as 'other' (n=35) (e.g., identifying barriers and facilitators to implement some interventions, the impact of the COVID-19 pandemic on health systems and societal outcomes and identifying prognostic factors to predict severe COVID-19 disease). This includes three of the non-COVID syntheses, that examine questions related to global research on climate and health, test accuracy, surveillance and association of screening procedures for prostate cancer and the association of e-cigarette substitution with cardiovascular conditions.

There is significant variation in the number of completed updates with most (n=37) having not completed the first version. Of those living-evidence syntheses that have moved past the protocol stage, the mean number of updates now being 4.57, with a range of 0-52. The mean time between search dates for each of the updates for those syntheses that had reported numerous versions was 107.96 days, which is inflated by one living evidence synthesis for which the mean time between updates was 656 days. Each update added on average 34 new studies to the review.

With respect to the quality of the study, AMSTAR ratings were split between high- (n=18) and medium-quality (n=20), however many (n=32) had not yet (or could not because of their status as a protocol) been rated. Most syntheses, not including protocols, had conducted a risk of bias assessment (n=44). However, relatively few (n=10) syntheses included a GRADE profile in the latest version.

Key findings related to the public health functions, populations and public-health system features covered by living-evidence syntheses

With respect to public health functions, all but two of the COVID-19 focused living evidence syntheses focused on health assessments and interventions as all were either assessing a public health challenge or testing an intervention. One LES was focused on system arrangements for care models for long COVID, while the second was focused on the socioeconomic impact of post COVID-19 conditions. In contrast, the non-COVID-19 syntheses, focused on health protection (global research on climate and health and screening procedures for prostate cancer) health promotion, and disease and injury prevention. There was also a significant concentration of syntheses that focused on aspects of health surveillance (n=31) and disease and injury prevention (n=34).

Many of the syntheses (n=37) focus on the general population or did not specify a population of interest. There is a concentration of syntheses that focus on adults aged 20-59 (n=21), adolescents aged 13-19 (n=13), and seniors aged 60 and over (n=11). Relatively less include findings relevant to families (n=8), infants (n=8), preschool children (n=5), or grade school children (n=9).

With respect to public-health system features, most of the syntheses identified (n=33) related to medical and digital health technology, all of which pertain to interventions to combat or minimize the effects of COVID-19. There is also a concentration of syntheses that pertain to delivery arrangements more generally (n=24) particularly as nine of the twelve new syntheses pertain to public health and social measures to reduce the transmission of COVID-19, many of which include changes to environments in which public health interventions would be delivered. Fewer syntheses were found that pertained to evidence, knowledge and information for delivery arrangements (n=10), workforce expertise and human resource capacity for delivery arrangements (n=6), governance arrangements (n=5) and financial arrangements (n=2). Many of the syntheses (n=42) pertained to public health issues in the community, while a second, smaller sub-set related to public-health issues at home (n=12).

Key findings related to the equity considerations covered by living-evidence syntheses

Of the 70 syntheses included, 51 included some type of equity-relevant evidence. Two of the non-COVID-19 living evidence syntheses include equity considerations. The first synthesis identifies differences in results related to interventions for increasing fruit and vegetable consumption for infants of different ethnicities and cultures as well as for children of families with different education and socioeconomic statuses. The second synthesis focuses on mapping global research on climate and health. The synthesis identifies a number of mediating pathways for the effects of climate change on health, many of which relate to equity considerations. From the COVID-19 focused living evidence syntheses, emphasis in equity considerations has shifted as a result of adding nine new syntheses which focus on public health and social measures to reduce transmission of COVID-19, almost all of which included findings related to occupational settings. As a result, the most common equity focus was on occupation (n=19) followed by discrimination and/or exclusion (n=17), and sub-analyses that focused on gender/sex differences (n=17). In the case of some included protocols, equity considerations were not explicitly called out as a feature of the planned analysis, however, equity-relevant findings may emerge when completing the synthesis.

Table 1: Overview of the characteristics of living evidence syntheses and the public-health functions and system features they cover*

	Public health functions						Public health system features					
	Health surveillance (n=31)	Health assessments and interventions (n=55)	Health protection (n=20)	Health promotion (n=4)	Disease and injury prevention (n=34)	Emergency preparedness and response (n=16)	Governance arrangements (n=5)	Financial arrangements (n=2)	Delivery arrangements (general) (n=24)	Delivery arrangements (workforce expertise and HR capacity) (n=6)	Delivery arrangements (medical and digital health technology) (n=33)	Delivery arrangements (evidence, knowledge and information) (n=10)
Type of living evidence synthesis (n=70)												
Evidence synthesis with a meta-analysis (n=19)	11	17	6	2	4	9	1	0	5	3	11	3
Evidence synthesis of effects (n=14)	-	4	3	-	14	-	-	-	9	-	4	1
Evidence synthesis addressing other questions (n=13)	10	11	3	-	4	-	1	2	6	2	3	2
Rapid evidence synthesis of effects (n=1)	1	1	-	-	1	-	-	-	-	-	1	-
Rapid evidence synthesis addressing other questions (n=5)	3	5	2	-	2	2	2	-	1	1	3	1
Protocol (n=18)	6	17	6	2	9	5	1	0	3	0	11	3
Question (n=70)												
Benefits (n=33)	4	22	15	1	24	10	4	0	10	2	19	3
Harms (n=27)	3	15	13	1	18	7	3	0	9	2	14	2
Costs (n=1)	-	1	1	-	-	1	-	-	-	-	1	-
Views and experiences (n=2)	-	2	2	-	1	1	-	-	-	-	2	-

	Public health functions						Public health system features					
	Health surveillance (n=31)	Health assessments and interventions (n=55)	Health protection (n=20)	Health promotion (n=4)	Disease and injury prevention (n=34)	Emergency preparedness and response (n=16)	Governance arrangements (n=5)	Financial arrangements (n=2)	Delivery arrangements (general) (n=24)	Delivery arrangements (workforce expertise and HR capacity) (n=6)	Delivery arrangements (medical and digital health technology) (n=33)	Delivery arrangements (evidence, knowledge and information) (n=10)
Acceptability (n=3)	-	3	2	-	2	1	-	-	-	-	3	-
Test accuracy (n=6)	5	5	1	-	-	5	-	-	1	-	5	-
Surveillance (n=2)	1	1	1	-	1	-	-	-	-	-	-	1
Association (n=11)	6	7	6	1	3	3	3	1	3	2	3	3
Prevalence or incidence (n=25)	21	25	4	1	5	3	3	2	10	4	10	4
Other (n=35)	24	33	8	3	11	4	3	2	13	4	13	7
Year of last search in latest update (n=58)												
2020 (n=16)	11	15	2	2	4	3	1	1	7	2	6	2
2021 (n=17)	8	15	7	-	7	7	2	1	4	2	11	2
2022 (n=8)	5	7	4	-	5	1	1	-	-	1	5	3
2023 (n=9)	-	-	-	-	9	-	-	-	9	-	-	-
Not applicable (n=20)	7	18	7	2	9	5	1	-	3	1	11	3
AMSTAR score												
High (n=18)	9	17	5	1	7	8	-	2	2	1	15	1
Medium (n=20)	14	18	5	-	8	2	2	-	9	2	7	4
Low (n=0)	-	-	-	-	-	-	-	-	-	-	-	-
Not applicable (n=29)	7	17	8	2	19	5	1	0	12	-	11	4

*The data used to derive this table is provided in Appendix 1 in a separate file, which provides our assessment of each using the categories included in the organizing framework.

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