4.12 Weak e e i a heal h- e ea ch e

Prior o he s ar of he COVID-19 pandemic, a gro p of researchers doc men ed he eaknesses in he heal h-research s s em. The called for a reorgani a ion of he s s em, incl ding he s r c res (e.g., global collabora ions like Cochrane) and incen i es (e.g., from ni ersi ies, f nders and jo rnals) ha nderpin , in order o be er mee he needs of decision-makers.(15-17) The ere primaril concerned h hree of he forms of e idence ha decision-makers picall enco n er, namel primar research (and specificall e al a ion, especiall randomi ed-con rolled rials), e idence s n heses, and g idelines (and o a lesser e en echnolog assessmen s).

While some of he eaknesses became more apparen hro gh he COVID-19 e idence response, he pandemic response also genera ed no able e amples of effor s o address man of he eaknesses. Al ho gh he researchers ere originall foc sed on heal h challenges and on sele forms of e idence, man of he insigh s also appl o o her socie al challenges and o o her forms of e idence. Tha said, a similar e ercise ill need o be nde aken for socie al challenges and forms of e idence ha are q e differen from hose described here. For e ample, he In ergo ernmen al Panel on Clima e Change (IPCC) has helped a grea deal h global coordina ion in heir area of foc s, and h sp rring ne approaches o modeling o er long ime hori ons. Ho e er, he IPCC ma also benefi from complemen ing hese approaches h pos -hoc e al a ions of clima e-change response op ions.

Pre-COVID weaknesses in the health-research system	Examples of weaknesses that became more apparent through the COVID-19 evidence response	Examples of efforts to address weaknesses through the COVID-19 evidence response
Lack of global coordination of evidence communities, with each ideally addressing a globally prioritized challenge using systematic and transparent methods and a full array of data sources *(e.g., study registries, regulatory agencies, and administrative databases)*	• Man opics prior i ed b COVID-END's global hori on-scanning panel ere ne er addressed b one or more 'bes ' e idence s n heses • Lo signal- o-noise ra io: nearl 11,000 e idence s n heses abo COVID-19 ere red ceable o ro ghl 600 'bes ' e idence s n heses in he COVID-END in en or (as of 7 No ember 2021) based on fo r cri eria: addressing a niq e decision-rele an q es ion, recenc of he search for e idence, q al of he s n hesis, and a ailabil of a GRADE e idence profile	• COVID-END engaged 55 leading e idence-s n hesis, g ideline-de elopmen and echnolog -assessmen gro ps, as ell as ci i en par ners and e idence in ermediaries, in effor s o red ce d plica ion and enhance coordina ion • PROSPERO enco raged hose regis ering a pro ocol for a COVID-19 e idence s n hesis o search for alread regis ered pro ocols and o pick a ne opic if d plica ion as likel (al ho gh 138 eams proceeded h a opic alread regis ered b one of 57 o her eams, incl ding 14 addressing h dro chloroq ine and se en addressing ocili mab) • GloPID-R (Global Research Collabora ion for Infec io s Disease Preparedness) engaged leading research-f nding organi a ions in coordina ing heir rapid f nding of primar research abo COVID-19
Lack of focus of evidence communities on maintaining living evidence syntheses that examine all interventions addressing a prioritized challenge *(e.g., a network meta-analysis rather than pairwise comparisons only)*	• Onl 13% of COVID-19 e idence s n heses self-iden ified as a li ing e idence s n hesis (ers s 52% in he COVID-END in en or here 'li ing' s a s as a cri erion sed o iden if 'bes ' e idence s n heses) and more han o hirds addressed clinical managemen (ra her han p blic-heal h meas res, heal h-s s em arrangemen s, and economic and social responses) • Onl 21% of li ing COVID-19 e idence s n heses had one pda e (af er he firs p blica ion), 8% had o, and 13% had o or more, hile he mean and median ime be een searches for s n heses h pda es as 49 and 31 da s, respec i el • Man COVID-19 e idence s n heses addressed single dr g rea men s, so he COVID-END in en or ransi ioned o rel ing primaril on COVID-NMA and o hers looking across all dr g rea men s (and o incl ding onl s n heses of prognos ic s dies ha incl de all a ailable prognos ic fac ors)	• Fo r e idence comm ni ies main ained high-q ali li ing me a-anal ses of all dr g rea men s, h one (COVID-NMA) s ppor ing eekl pda es of risk-of-bias assessmen s and GRADE cer ain assessmen s

Lack of focus of evidence communities on identifying harms arising from interventions as well as benefits *(and more generally including a broader array of study designs and types of data)*	• Then-e is ing s dies and s n heses made i diffic l o nders and ha o make of repor s abo blood clo s being e perienced b seled accine recipien s	• A COVID-END eam cond ed a s s ema ic re ie o comple e a ca sali assessmen of hrombo ic hromboc openia ha is emporall rela ed o accine adminis ra ion
Lack of sharing of individual participant data and its use to examine how findings vary by type of participant, setting or other factors, and hence how interventions can be better personalized or contextualized	• Man repor s doc men ed he lack of sharing of indi id al par icipan da a (e.g., one re ie of 140 s dies earl in he pandemic fo nd ha da a ere shared from onl one s d see bit.ly/31WQUxM)	• The COVID-19 Kno ledge Accelera or ad anced he me hods needed o share comp able e pressions of e idence and g idance across pla forms, and Vi li e ended i s pla form o enable he sharing of COVID-19 rials da a
Lack of inclusion in evidence communities of representatives from all relevant evidence groups *(e.g., researchers conducting primary studies like trials, evidence synthesizers and guideline developers)*, all relevant types of decision-makers, and all relevant types of evidence intermediaries	• Man repor s described ho ci i ens ere less in ol ed in COVID-19 research han he had been in o her pes of research before he pandemic, as ell as abo plain-lang age s mmaries of e idence s n heses no being a ailable earl in he pandemic (e.g., bit.ly/3kwCHhr)	• The Na ional COVID-19 Clinical E idence Task Force in ol ed man heal h professionals (and heir associa ions) and pa ien s in heir li ing g idelines, and he orked in par nership h e idence comm n ies main aining li ing ne ork me a-anal ses • Man gro ps engaged in modeling o help choose among a ailable op ions (e.g., lockdo ns) based on a ailable e idence and e per opinion, and in some cases he con e pro ided b decision-makers • Man gro ps prepared con e ali ed rapid s n heses a he req es of decision-makers (h ci i en par ners in he case of man COVID-END rapid s n heses)
Lack of use by evidence communities of a range of new approaches to become more efficient and timely in their work *(e.g., machine learning and crowd-sourcing contributions to their work)*	• More han 18,000 s dies had been ploaded o j s one preprin ser er (medR i) b J l 2021, drama icall shor ening he ime o p blica ion (hile ha ing nce ain harms d e o he lack of peer re ie) • Man se cases for machine-learning approaches in COVID-19 responses ere iden ified in a medi m-q al scoping re ie of 183 repor s (bit.ly/3D7bTeV), b ere no idel sed earl in he pandemic	• L*VE (Li ing O er ie of E idence) sed machine learning o main ain a repos or of primar s dies and e idence s n heses, and he EPPI-Cen re sed machine learning o main ain a li ing e idence map
Lack of reporting about the gaps in and quality and transparency of primary studies (including conflicts of interest) as part of a feedback loop meant to support learning and improvement – for more details, see box 1 in this paper: (17)	• The res s of man primar s dies ha e been made a ailable hro gh media releases ins ead of hro gh f ll research repor s ha can be cri icall appraised • Man repor s no ed ha primar s dies ere fo nd o ha e an in ermedia e o high risk of bias (e.g., 81% of he 713 ar icles incl ding original pa ien da a from a pool of 10,516 COVID-19 ar icles see bi.l /3HiI90X) and o ha e been re rac ed beca se of scien ific miscond d • COVID-END prepared repor s abo e idence s n heses' lack of c rrenc (91% and 61% in he f ll da abase and in en or of 'bes ' e idence s n heses, respec i el , ere based on searches comple ed more han 180 da s earlier), medi m or lo q al (75% and 55%, respec i el), and lack of an e idence profile (81% and 42%, respec i el), as ell as ho rapid s n heses ere more likel o be lo q al han f ll s n heses (43% compared o 13%)	• RECOVERY (reco er rial.ne) and WHO COVID Solidari Therape ics Trial pro ided pla forms for ra-rapid, high-q al , m i-co n r rials of COVID-19 dr g rea men s • COVID-19 E idence Aler s profiled q al -ra ed primar s dies