

**REVIEW:**

# **BROADER HEALTH IMPACTS OF VERTICAL RESPONSES TO COVID-19 IN LOW- AND MIDDLE-INCOME COUNTRIES**

The COVID-19 pandemic has undermined capacity and efforts to address other health needs that are just as pressing as the virus itself, particularly in low- and middle-income countries (LMICs). Pressure on governments to act on COVID-19 now to save “immediately identifiable lives” rather than “statistical lives at risk”<sup>1</sup> has had and will continue to have harmful short- and long-term consequences for other areas of health.<sup>a</sup>

This paper reviews **the effects of vertical responses to COVID-19 on health systems, services, and people’s access to and use of them in LMICs, where historic and ongoing under-investments heighten vulnerability to a multiplicity of health threats.** We use the term ‘vertical response’ to describe decisions, measures and actions taken solely with the purpose of preventing and containing COVID-19, often without adequate consideration of how this affects the wider health system and pre-existing resource constraints. Through four main sections focused on 1) characterising vertical response, 2) the drivers of broader health impacts, 3) evidence of impacts, and finally 4) suggestions for mitigation, we provide insight for actors in government, agencies, organisations and communities to design and implement more proportionate, appropriate, comprehensive and socially just responses that address COVID-19 without compromising other aspects of health.

Beyond immediate action, there is a need to re-evaluate priorities and approaches in global health, both in the context of COVID-19 and beyond. If the well-being of all people is truly valued, ‘whole of health’ approaches<sup>1</sup> which account for health trade-offs of COVID-19 response in the short-term, and address the health needs of diverse populations in the medium- to long-term are crucial.

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# SUMMARY

## OVERARCHING POINTS

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- Powerful discourses and pressures at both global and national levels (along with real fears about potential mortality caused by COVID-19) have contributed to the emergence and imposition of vertical COVID-19-focused responses which have undermined other health priorities in LMICs. Some interventions, such as ‘lockdowns’ and resource diversions, have more direct and obvious impacts on other areas of health although other key pillars of effective epidemic response (e.g. surveillance and risk communication) can also have blind spots and similarly serve to sideline other health priorities if integrative approaches are not taken.
- LMICs are particularly vulnerable to broader health impacts from vertical responses as these interventions interact with weak health systems, and baseline health, social and economic vulnerabilities to produce even worse outcomes. Some settings have seen several times as many non-COVID-19-related excess deaths as COVID-19 deaths,<sup>2,3</sup> sharply illustrating how such interactions is resulting in additional mortality.<sup>4</sup>
- The younger average age of populations in many LMICs appears to make them less medically vulnerable to COVID-19 overall (vis-à-vis older populations of wealthier countries). Yet, they face serious health risks from other conditions. For perspective, 190 thousand COVID-19 deaths are expected in Africa,<sup>5</sup> while in 2018, over 2.7 million (mostly preventable) child deaths occurred on the continent.<sup>6</sup>
- The substantial, negative impacts on other areas of health resulting from vertical COVID-19 responses and their fallout in LMICs are increasingly recognised, but large gaps between discussion, data collection, and action remain. This review reveals critical questions about proportionality and equity of response, and amplifies a moral imperative to act.

## DRIVERS & EVIDENCE OF BROADER HEALTH IMPACTS

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- Measures to mitigate COVID-19 transmission have directly and indirectly impacted health service provision and access, including through supply chain disruption, diversion of resources, and the further stretching of already strained LMIC health system resources.<sup>7</sup> Child immunisations, TB, HIV and malaria prevention, testing and treatment,

sexual and reproductive health services and nutrition services have been among critical services affected.

- Predictive modelling of broader health impacts suggest the world could see an additional 1.2 million (mostly preventable) child deaths, nearly 57 thousand additional maternal deaths,<sup>8</sup> 1.4 million additional deaths to TB,<sup>9</sup> a doubling of malaria cases in Africa,<sup>10</sup> and decreases in life expectancy for people with NCDs among other impacts.<sup>11</sup>
- People may avoid seeking health care due not only to fears of becoming infected with COVID-19, but also of quarantine or isolation if they are found to be infected, or of punitive action for breaching measures such as movement restrictions.
- The pandemic has increased pressure on people with caring roles within households and communities – disproportionately women – and further impacted their ability to access care.<sup>12</sup>
- Adaptations to health service delivery such as use of telemedicine platforms exclude many who lack skills or access to relevant technologies, while in-person services now require substantially more resources to deliver safely (PPE, disinfectant, space etc.), and thus make it more difficult and costly to provide care.

## **IMPROVING RESPONSE TO MINIMISE NEGATIVE IMPACTS ON OTHER AREAS OF HEALTH**

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- The impact of COVID-19 must be put in perspective vis-à-vis other disease burdens and health services, with a medium- and long-term view. Prioritise health system resources via meaningful participation of affected communities and health system users, with special consideration for the participation of vulnerable groups.
- Make and advance equitable global commitments with specific goals and indicators to contain and eradicate COVID-19 in the context of broader health systems strengthening in LMICs, which are more vulnerable to broader health impacts and COVID-19 endemicity.<sup>13</sup> Countries, donors and other global actors should be held accountable to these commitments – as well as to commitments to primary health and Universal Health Coverage – and provide necessary funding and support.
- Integrate COVID-19 response and services within existing health and social programmes.<sup>14</sup> Share information systems, infrastructures, diagnostic and treatment capacities and outreach to break siloes<sup>15</sup> in ways which can effectively respond to COVID-19 alongside other health issues, and provide perspective for evidence-based

prioritisation of resources. Capacity and systems that have been set up to respond specifically to COVID-19 – such as surveillance – should also be leveraged to respond to other health issues.

- Make cross-sectoral links between integrated pandemic response (addressing COVID-19 and other health issues) and other social programmes (e.g. social protection, education etc.) to incorporate the social determinants of health.<sup>16</sup>
- Support accountability of local-level health providers and policy makers through the establishment and public monitoring of health indicators and services, and integration of patient and community feedback to improve health services.
- Community-based, people-led approaches are more likely to be accepted by communities, and be successful.<sup>17</sup> Build on networks of existing civil society organisations (unions, professional associations, religious groups, women’s groups, etc.) and social movements (within health and across sectors) and empower them to lead elements of response and healthcare delivery with resources and support.
- Work with private clinicians, pharmacists, drug sellers, traditional and faith healers, herbalists and others, who may be the first point of health care for many. Award them necessary resources and skills for infection prevention (including PPE), and to support triaging, surveillance, diagnosis and treatment for a range of health issues.
- Real-time surveillance of perceptions, delivery and access to health services can enable policy-makers and responders to take immediate, context-relevant action.<sup>18</sup> Encourage greater collection and use of granular social science research to identify what health services are disrupted and why, to understand localised impacts, and to guide local and national response-actions. Over time and integrated alongside a diversity of natural and social science data considered through multi-sectoral deliberative processes,<sup>18</sup> this can also feed into joined-up medium- and longer-term approaches and commitments up to the task of addressing the triple threat of COVID-19, other serious health priorities, and impending economic crises into the future.
- Adopt a framework for integrated data analysis, such as the Integrated, Multisectoral Outbreak Analytics (IMOA) model, for more comprehensive understanding of cause and effect of broader health impacts at multiple levels. IMOA brings together data on behaviour, perceptions, health service use, epidemiological trends of other health outcomes, movement mapping and market prices against a timeline of applied interventions.<sup>19</sup>

## WHAT HAS DRIVEN VERTICAL RESPONSES TO COVID-19?

### Global norms, discourses and power relations

The global nature of the pandemic has led to powerful discourses on containment measures. Although WHO recommends maintaining essential health services alongside COVID-19 interventions,<sup>20</sup> in practice this has been challenging. COVID-19-focused messaging, research, and strategising (as well as real fears of potential COVID-19 mortality), amplified by global and national media, have contributed to the rolling out of vertical, COVID-19-specific responses.<sup>1</sup> ‘Disease-exceptionalism’ and vertical response to outbreaks is not new.<sup>21,22</sup> For decades, the global health community has focused on targeted identification and response to infectious disease outbreaks when and where they emerge – usually in LMICs – not least, as suggested by a common critique, to stop them before they can threaten wealthy populations.<sup>23</sup> This has come at the expense of more holistic and equitable health systems strengthening which centre the health priorities of people. This time, COVID-19 has emerged from global power centres, and spread into the LMICs.<sup>24</sup> Fortunately, initially dire predictions have not seemed to transpire in many LMICs, particularly in Africa, where younger populations and lower (although increasing<sup>25</sup>) rates of NCDs<sup>b</sup> that raise COVID-19 risk appear to be protective against severe COVID-19 disease.<sup>28</sup> The latest model suggests 190 thousand COVID-19 deaths could occur on the continent,<sup>5</sup> a fraction of the 2.7 million mostly preventable child deaths it saw in 2018,<sup>6</sup> or even of the 390 thousand malaria deaths the same year.<sup>29</sup> Yet, the significant threat COVID-19 continues to pose to older, wealthier populations in more powerful countries has buoyed the visibility of COVID-19-centric discourse and reinforced targeted research and action against it around the world. This raises questions about the extent to which anxiety about the virus spreading in LMICs might actually be rooted in concerns that it may ‘boomerang’ back to high-income countries (HICs).<sup>30</sup>

### Tendencies for ‘one size fits all’ approaches

In addition to privileging wealthy country interests in global health, there is a tendency for approaches to infectious disease developed in and with these settings in mind, to be applied to LMICs. Promoted as ‘best practices’, these approaches can make assumptions about resources and conditions that do not reflect the challenges and realities faced by people in LMICs. Yet, often reliant on humanitarian aid, funding and guidance from donors and international agencies, LMICs are particularly susceptible to pressures – including

domestic political pressures – to adopt vertical, ‘best practice’ approaches, despite diverse health needs and circumstances.<sup>31</sup>

## WHAT HAVE VERTICAL RESPONSES TO COVID-19 LOOKED LIKE?

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In the absence of vaccines or effective medicines, infection prevention and control – a major component of which is limiting in-person contact – has been considered one of the most effective interventions for preventing and containing COVID-19.<sup>32</sup> An effective overall response also includes other public health measures such as surveillance, contact tracing, testing, risk communication and community engagement. All of these are key pillars of epidemic response<sup>33</sup> – and yet, they may have blind spots for other areas of health if vertical approaches to them are taken. Early moves by LMIC governments however, focused on emergency measures aimed at limiting in-person contact similar to those initially enacted in HICs. These measures, particularly in LMIC settings, have more questionable public health rationales and involve higher potential for collateral health damage. Strategies across settings ranged from near complete ‘lockdowns’ to more partial interventions in daily life. The specific mix of these ‘non-pharmaceutical interventions’ (NPIs), their ‘stringency’ and duration has ranged widely as governments have responded to COVID-19 transmission dynamics within particular political, social and economic contexts, as well as developed and scaled up capacity under other pillars of response. Particularly disruptive NPIs have included:

- halting ‘non-essential’ work activity
- movement restrictions and strict border controls or closures
- suspension of public gatherings
- stopping or scaling down public and private transportation systems
- curfews and stay-at-home measures
- closure of schools and other public institutions
- suspension of ‘non-essential’ health services
- modifications to health service delivery, including closure of brick-and-mortar facilities

Whatever mix and intensity, such measures – alongside resource diversions and other actions and impacts – have disrupted the availability, accessibility and use of health services, particularly in LMICs. Even after they are no longer in place – indeed, many have been lifted and relaxed in many contexts – their effects continue to ripple across time and space, to result in varied impacts as they interact with different contexts and baseline vulnerabilities.<sup>c</sup>

# WHAT IS DRIVING BROADER HEALTH IMPACTS?

The drivers of broader health impacts of COVID-19 overall are highly complex and involve interactions between multiple factors across social, economic, political and health systems at different levels. This section maps some of this complexity, including baseline vulnerabilities, as well as 'supply' and 'demand-side' drivers.

## CONTEXTUAL FACTORS AND BASELINE VULNERABILITIES

Demographics and disease-burden profiles, health system and infrastructure realities, and other social, economic and political factors differ between and within countries and communities. Interactions between these factors and responses to COVID-19 result in diverse health outcomes.

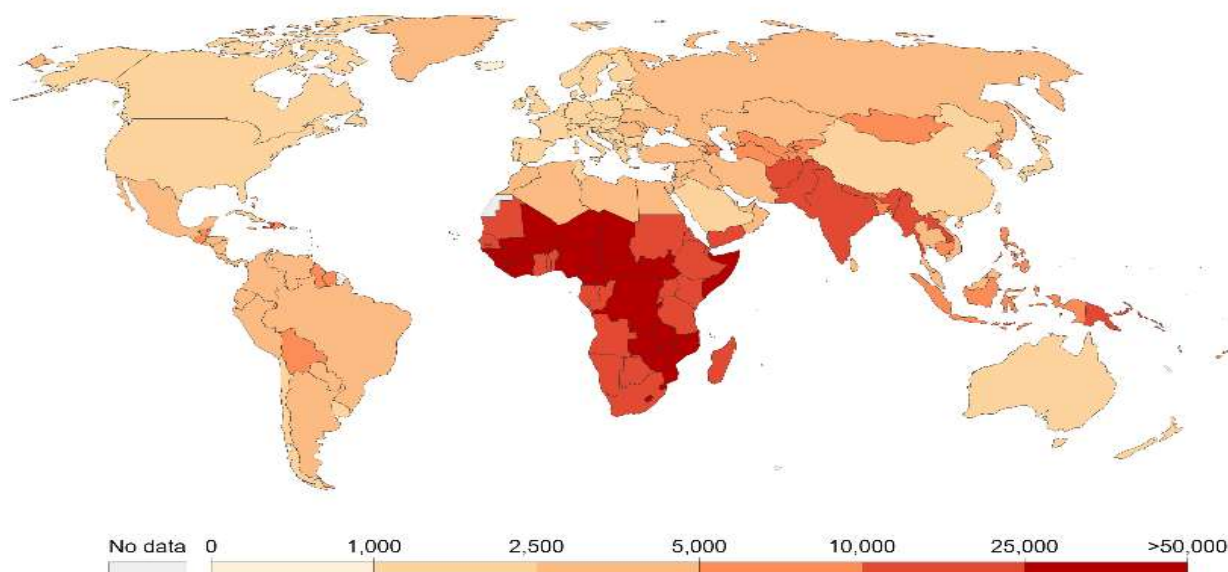
- **Population health and demographics** - While the younger populations of LMICs may not be at as high a risk of severe disease or death from COVID-19 as populations in wealthier countries, they do face considerably higher risks of communicable, neonatal, maternal and nutritional diseases which lead to early death (see **Figure 1**) (as well as

**Figure 1** DALY (Disability Adjusted Life Years) rates from a range of disease and health issues.

### DALY rates from communicable, neonatal, maternal & nutritional diseases, 2017



Age-standardized DALY (Disability-Adjusted Life Year) rates per 100,000 individuals from non-communicable diseases (NCDs). DALYs are used to measure total burden of disease - both from years of life lost and years lived with a disability. One DALY equals one lost year of healthy life.



Source: IHME, Global Burden of Disease

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Source: Our World in Data (2017) DALY rates from a range of diseases and health issues. <https://ourworldindata.org/grapher/burden-of-disease-rates-from-communicable-neonatal-maternal-nutritional-diseases>

rising rates of NCDs). Broader health impacts of COVID-19 responses will reflect and exacerbate the specific disease burdens shouldered by countries and communities.

- **Health system capacity and organisation** - LMICs have weaker, more fragmented health systems and fewer resources and personnel compared to HICs.<sup>7</sup> Access to care is limited, especially for poor urban and rural groups, even in non-pandemic times. The average low-income country has only one qualified physician per five thousand people,<sup>35</sup> and many people rely on private and informal service providers who may be ignored or even maligned by the state during outbreak response.<sup>36,37</sup>
- **Social and economic factors** - Health risks are compounded by poverty and economic precarity. Two billion people, most in LMICs, rely on informal work and lack sick pay and unemployment insurance.<sup>38</sup> Millions also live in densely packed informal settlements with limited clean water and sanitation.<sup>39</sup> Unemployment and movement restrictions may increase infection risks in these settings (e.g. cholera and TB). The pandemic may push 71 million additional people into extreme poverty.<sup>40</sup> LMIC governments lack capacity to provide large-scale economic support to cushion these impacts.
- **Other vulnerable social groups** - Just as countries are not equally vulnerable to broader health impacts, people within countries, communities and even households face different levels of risk. **Table 1** highlights some particularly vulnerable groups, and how they may be impacted. It is important to remember that categories also often overlap, compounding vulnerability for people who live at their intersections.

**Table 1.** Social groups experiencing heightened baseline vulnerabilities.

Social group	Explanation
People living with disabilities (PLWD)	Restrictive measures will compound difficulties experienced by PLWD access to health services, <sup>41</sup> especially in LMICs where 80% of PLWD reside. <sup>42</sup> Those reliant on homecare and assistance services for instance, may lose this support, <sup>43</sup> while people with sensory or cognitive disabilities may be excluded from important information. <sup>d</sup>
Elderly people	As with services for PLWD, geriatric services are a neglected health sector. <sup>44</sup> Elderly are more likely to have pre-existing health conditions, and require/rely on support. Many – particularly women – may be also be caregivers themselves. Interruptions to care or ability to provide it, along with increased isolation may leave elders particularly vulnerable. <sup>45</sup>
Women and girls	Entrenched gender discrimination puts women and girls at higher risk for health problems including malnutrition, poor sexual and reproductive health outcomes, and generally not receiving needed healthcare. They also often have caring responsibilities at home or other workplaces that increase their risks for infection. Income losses and increased food



	insecurity may exacerbate these risks if scarce resources are prioritised for men and boys.
Refugees, displaced people and migrant workers	Refugees and displaced people in crowded camp settings already face greater health risks (including to COVID-19). Restrictions on aid workers' access to camps may reduce availability of critical health resources (water, food, medicine and care), <sup>46</sup> and impede access to protection and legal services, which may increase trafficking risks. <sup>47,48</sup>
People in conflict-affected settings	War or prolonged unrest have left some health systems even less able to appropriately and safely implement recommended NPIs. Conflict already impacts movement, socio-economic and psychosocial wellbeing and increases sexual and gender-based violence (SGBV) and recruitment (including of children) into armed groups. Strict NPIs can worsen these conditions and risks, especially for women and children.
Racial, ethnic and religious minorities	Minority groups which already face discrimination and violence in their communities may face additional hurdles when seeking basic healthcare, including being outright denied treatment. <sup>49</sup> Minorities may also be blamed for COVID-19, and correspondingly discriminated against. <sup>50</sup>

## COVID-19 RESPONSES AS DRIVERS OF BROADER HEALTH IMPACTS

### Supply side: Health service availability and accessibility

- Disruptions to medical supply chains and logistics** - A range of actors in global medical supply chains stopped or slowed activity as production, transport and border controls were disrupted, resulting in shortages and delays of essential health resources like contraceptives,<sup>51</sup> insulin,<sup>52</sup> antibiotics, anti-malarials,<sup>53</sup> anti-retrovirals, vaccines,<sup>54</sup> cold-chain equipment, diagnostic tests and personal protective equipment (PPE), with import-reliant countries being particularly vulnerable.<sup>55,56</sup>
- Increased costs for essential goods and loss of income** - Alongside income losses (including remittances<sup>57</sup>), increased costs for medical resources due to delays and scarcities have made it harder for people to travel to reach services, and to purchase, let alone stock up on such resources, including essential treatments.<sup>58</sup> This may push some to forego or ration medicines, with implications for health and drug resistance.<sup>e</sup> Qualitative evidence from the DRC suggests recent falls in non-essential health service utilisation is more attributable to lack of money than fear of contracting COVID-19.<sup>59</sup>
- Transport and care** - Healthcare workers (HCWs), informal carers (such as family members) and those requiring care may be unable to travel to deliver or receive care if transport systems are disrupted.<sup>f</sup> In Uganda, the ban on motorcycle-taxis, relied upon especially by poor and rural people, made it difficult for HCWs and patients to reach

facilities.<sup>60</sup> Several pregnant women died in the country after attempting to walk to reach care.<sup>61</sup> People seeking HIV testing have reported being unable to reach free hospitals on foot, and unable to afford closer fee-based services.<sup>62</sup> Transport disruptions also impact mobile health activities which serve poor and rural populations.<sup>63</sup>

- **Facility closures** - Brick-and-mortar facilities in both public and private sectors have been intentionally closed or forced to shut, often due to a lack of resources to continue operating safely (clean water, disinfectant, PPE etc.). For example, in Karachi, 18% of facilities providing child immunisations closed during lockdown.<sup>64</sup> Closures are also driven by COVID-19 outbreaks among staff. While patients may be advised to seek care elsewhere, other barriers, such as the need to pay for more expensive private care, may prevent them from doing so.<sup>65</sup>
- **Resource diversion** - Closures or service reductions may also occur due to resources being diverted to COVID-19 response. A survey of 106 countries found that 20% of laboratories that normally support TB and HIV diagnostics experienced severe disruptions as they pivoted to focus on COVID-19.<sup>66</sup> The redeployment of HCWs to support COVID-19 response, and repurposing of health facilities has also impacted essential services. In Kenya, Iraq and Honduras, health centres and hospitals where pregnant women had traditionally gone to give birth had been shut down or converted, forcing women to seek services elsewhere.<sup>67</sup>
- **Funding shortfalls** - Governments and organisations reliant on aid to operate health services have struggled as donors fail to provide funds, particularly at the grassroots level.<sup>68</sup> In Yemen for instance, resource diversions and cuts to acute malnutrition services resulted in nearly 30 thousand fewer children a month receiving life-saving care; humanitarian organisations report receiving only 18% of needed funding in the country.<sup>69</sup> Many countries also failed to budget for essential programmes in country-level COVID-19 response plans. For instance, only 17% of 160 countries (and only 12% of low-income countries) allocated additional funds to sustain NCD services.<sup>70</sup>
- **Adaptations to health service delivery** - Health actors are modifying service delivery to minimise COVID-19 infection risks through minimising facility-based and in-person encounters, including through the adoption or scaling up of phone-based or digital platforms.<sup>71</sup> In LMICs, access to mobile phones or other communications technology, network credit, reliable coverage, data, internet, or associated skills, are not universal among either patients or HCWs. In sub-Saharan Africa, 1GB of data costs almost 40% of an average monthly wage.<sup>72</sup> Women,<sup>73</sup> elderly<sup>45</sup> and PLWD may be particularly

impacted. In India for example, only 43% of women could access a mobile phone in 2018.<sup>74</sup> For those with access, having to share a phone, or lacking private space to use it, can also be an issue. For services requiring in-person contact (e.g. immunisations, medical testing, surgery), the need for strict infection prevention control, PPE, equipment, and training to safely operate, significantly raises service delivery costs. Longer wait times may discourage care seeking. Services typically delivered in mass settings, may have to go door-to-door, bringing additional logistics expenses.

- **Failures of health communication** - If people are unaware of whether and how services have changed, they may be unable to access needed care. Experience from South Africa suggests women there have been unsure whether to visit clinics for non-COVID-19 treatment,<sup>75</sup> while in India, confusion about whether TB clinics were open (alongside transport restrictions) left TB patients dangerously low on medicine. It took the government a month into lockdown to clarify that TB services should continue uninterrupted.<sup>65</sup> In China, there were reports of people being turned away from health facilities, indicating they had not been made aware of closures, or alternatives.<sup>76</sup>
- **Disruption or suspension of specific health services** - Governments have been encouraged to identify and prioritise continued delivery of ‘essential’ health services, and to suspend ‘non-essential’ services, particularly during the most intense phases of a COVID-19 outbreak.<sup>20</sup> In addition to intentional service suspensions, many essential services have also been disrupted. Furthermore, even if services are declared ‘essential’ at the national level, not everyone with power may agree. For instance, women seeking sexual and reproductive services in Zimbabwe and Ghana have reported being stopped by security officials who did not think this was a good enough reason for them to be out.<sup>77</sup> Even if short-lived, interruptions may have significant and long-term negative health impacts, including backsliding on hard-won gains. **Table 2** offers examples of how this is occurring in some specific health areas.

**Table 2.** Drivers of broader health impacts in some specific health areas.

Service area	Explanation
Immunisations	Dozens of routine and mass immunisation campaigns have been cancelled, postponed or disrupted including due to lack of vaccines and other resources. <sup>78,79</sup> Halted polio vaccination campaigns threaten eradication efforts in countries like Pakistan and Afghanistan. <sup>64,80</sup> Resurgence of measles in several countries including the DRC, Syria and Ukraine in recent years is extremely alarming. <sup>81</sup>

Anti-malaria campaigns	Price hikes, shortages and logistical challenges in the distribution of preventive and therapeutic malaria medicines, N95 masks (to protect workers conducting vector-control spraying activities), and insecticide-treated nets have been reported, <sup>36</sup> including in India <sup>82</sup> and Kenya. <sup>83</sup> In June, 73% of 106 surveyed countries reported service disruptions. <sup>66</sup>
HIV and TB screening and treatment	The processing of diagnostics for TB and HIV has been impacted by resources being diverted to COVID-19 response, and stockouts of anti-retroviral drugs have been reported across 73 countries. <sup>84</sup> In India, notifications of new TB diagnoses had dropped 80% in May. <sup>85</sup> Early detection and treatment is particularly important to prevent TB deaths in children. <sup>86</sup>
Screening and treatment for NCDs	A WHO assessment found 77% of 160 countries reported disruptions to NCD services including rehabilitative services (i.e. post-operation recovery, physical therapy), hypertension, diabetes and asthma management, palliative care, dental care, cancer treatment and cardiovascular emergencies. <sup>70</sup> Routine screenings for some forms of cancer and 'non-urgent' surgeries (including for early-stage cancer) have been cancelled or postponed. <sup>87</sup> As activities resume, backlogs will cause further delays, turning non-urgent needs urgent.
Sexual and reproductive health	Abortion care and family planning services have been suspended in some settings, if not severely disrupted. <sup>67,77,88</sup> IPPF reported the closure of thousands of service points across 64 countries. Several, including Pakistan, El Salvador and Zambia saw over 100 closures each. <sup>89</sup> At the same time, school closures put girls at risk of early marriage and pregnancy. <sup>90,91</sup> Support for victims of GBV has reduced. Anti-abortion and family planning actors have also taken advantage of the pandemic, attempting to limit access to these services for millions of women. <sup>92</sup>
Neglected tropical diseases (NTDs)	National programmes to eradicate NTDs (i.e. sleeping sickness, intestinal worms) which impact the world's most marginalised have been disrupted or suspended <sup>93</sup> as case finding and treatment have halted, resources diverted, and staff become ill. <sup>94</sup> Many NTD programmes rely on mass drug administration events, <sup>95</sup> now suspended due to infection risks.

## Demand side: Social and psychosocial drivers of health service use

While it is hard to disentangle exactly what keeps people from accessing health services in any given context without detailed research, significant drops in utilisation in some settings is clear. In Sierra Leone, although several hospitals had closed, bed occupancy rates in open facilities dropped to 20% (from 80% in January)<sup>96</sup> while in Kinshasa, researchers observed a 10% drop in general health service utilisation from March to June.<sup>97</sup> Although the impeding supply side factors described above may contribute to low utilisation, demand side dynamics including fear, and social circumstances are also at play.

- **Fear of infection and consequences of control measures** - Individuals needing care, or their caregivers, may reasonably fear they or their loved ones may contract COVID-19 at

or in transit to health facilities. This has been a major driver of underutilisation of health services in past outbreaks, most notably during the West African Ebola epidemic. Research interviews conducted in southwest Uganda however, illustrate how it is not just fear of COVID-19 infection itself that may be driving care avoidance:

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*People do not seek medical care from the hospital, fearing to be put under quarantine in case they are found to have COVID-19. Others fear to be exposed and get infected. So, people prefer staying in their homes even when they are sick.<sup>62</sup>*

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The quote suggests that the consequences of being found to have COVID-19 may be perceived as worse than the possibility of not receiving care for it or other conditions. Quarantine and isolation may mean separation from security, income and family, including other people who require care.

An estimated 90 thousand HCWs have contracted COVID-19.<sup>98</sup> Closure of immunisation clinics in Karachi is thought to at least partially have been due to HCWs fear of this.<sup>64</sup> Without adequate PPE and other resources such as clean water<sup>99</sup> (and no way to definitively tell if patients have COVID-19) HCWs may refuse to work, or turn patients away. Because COVID-19 symptoms are similar to TB, there have been reports of HCWs refusing to handle TB samples for testing in Nigeria.<sup>100</sup>

- **Fear of punishment or violence** - Fear of harassment, violence, fines, or imprisonment for disobeying NPIs may impact health service seeking or provision. After the brutal beating of a driver transporting a pregnant woman to hospital after curfew in Kenya, it became difficult for women to find transport.<sup>67</sup> Armed groups in Colombia have reportedly engaged in violent suppression of those not abiding NPIs.<sup>101</sup> Enforcers may also use the pandemic as pre-text to harass already vulnerable groups such as LGBTQI people or sex workers, making it difficult or dangerous for them to travel to access services.<sup>102</sup> Jess, a non-binary person in Colombia expressed fear of going out under gendered-travel restrictions allowing women and men to go out on alternating days:

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*I panic that if there is a group of men who identify me as a woman, they might want to rape me... or beat me to teach me that I am not a man.<sup>103</sup>*

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- **Stigma** - People with stigmatising conditions such as HIV or other sexually transmitted diseases may hesitate to access care through different pathways for fear of having their status revealed. Mistrust of privacy protections on digital platforms, or the need to communicate with people other than their usual doctor may disincentivise care-

seeking.<sup>104</sup> HCWs are also vulnerable to stigma if perceived as a source of infection. Reports of verbal and physical abuse, and even eviction have been made around the world.<sup>105,106</sup> This adds to immense psychological stress, intense work pressure and fear of infection, potentially pushing them to strike, quit, or worse.<sup>107-109</sup>

- **Care responsibilities** - Carers – mainly women – may be forced to leave their jobs (if they have not already lost them) to provide care for children and elders in the wake of school, nursery and support service closures.<sup>110</sup> Resulting income losses may make it harder for them to access health services. They may also be reluctant or unable to leave children or elders at home, or to bring them along for fear of exposing them to COVID-19 while attempting to access services for themselves. These pressures may also affect the healthcare workforce which is majority female.
- **Adherence to difficult treatment** - Uncomfortable side-effects (e.g. nausea, vomiting and diarrhea) can make it difficult for patients to take drugs for TB, HIV and other conditions without support. TB patients for instance, often take medications accompanied by an HCW,<sup>111</sup> while HIV treatment adherence is strongly linked to regular health provider visits.<sup>112</sup> On their own, patients may struggle to adhere, and risk developing drug resistance.<sup>65</sup> Lack of food can also impact adherence. This can exacerbate side-effects like vomiting, which diminishes drug effectiveness. Increased food prices and loss of income has made it difficult for LGBT+ people living with HIV in southwest Uganda to buy food – the fever, headaches and weakness the drugs cause them on an empty stomach is making it difficult to sustain treatment.<sup>102</sup>

## WHAT IS THE EVIDENCE OF BROADER HEALTH IMPACTS?

### LIMITED EVIDENCE – LIMITED PRIORITISATION

Research priorities and data collection have focused on COVID-19, with far less attention given to other health issues and impacts. Indeed, it is difficult to collect or monitor data in any fast-moving emergency, particularly in LMICs where robust data collection mechanisms are weak to non-existent. This is one reason quality data on non-COVID-19 health impacts remains scarce. Rather, broad modelled estimates, based on assumptions, past experiences and emergent understandings of the current pandemic predominate. However, lack of visibility, understanding and action on these issues as earlier suggested,

also reflects the influence of powerful discourses and pressures to prioritise COVID-19 at all levels. Although attention to the broader health impacts of COVID-19 (including vertical responses) has been growing, especially as countries move past their epidemiological peaks, significant damage has already been done, and it remains urgent to expand research, understanding and response in these areas. This section offers an overview of some of the evidence and estimates which do exist in this area, and reflects on gaps.

## EXCESS DEATHS

One indicator of broader health impacts that researchers have looked to are the number of deaths in excess of expected mortality which are not attributed to COVID-19. Quality data of this nature come mostly from HICs.<sup>113</sup> While its reliability is limited, some LMIC settings (sometimes only at city level) also collect such data (or at least data which can be used as a proxy) and the WHO offers a tool to support countries to do so.<sup>114</sup> In Jakarta for instance, burial data suggests nine times as many excess deaths from non-COVID-19 causes occurred from March to May as COVID-19 deaths.<sup>2</sup> **Figure 2**<sup>2</sup> offers additional examples of excess deaths in some LMIC settings.<sup>9</sup>

**Figure 2** Deaths attributed to COVID-19 compared with 'other excess deaths' across five LMIC settings.\*

### Official COVID-19 deaths and 'other excess deaths' from a range of LMIC settings

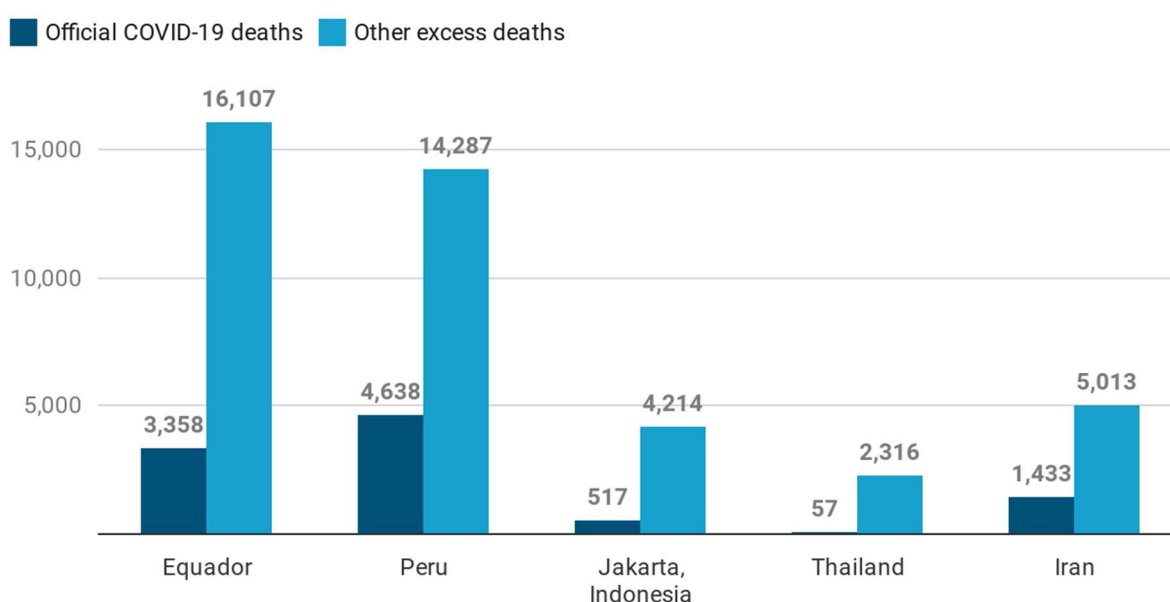


Chart: SSHAP • Source: BBC News • Created with Datawrapper

\*Data for Ecuador, Peru, Jakarta and Thailand is from Mar.-May 2020; data from Iran is from Dec. 2019-Mar. 2020.

It is likely that some (or indeed, many) deaths caused by COVID-19 are included in these excess death figures due to having been missed as such. Additionally, many deaths may never be recorded at all as they may occur outside hospitals, and bodies may not be taken to official morgues or registered cemeteries. Nevertheless, substantial additional mortality is clearly occurring, and likely reflects lack of access to or utilisation of crucial healthcare.<sup>4</sup>

## **NON-COMMUNICABLE DISEASE (NCDs)**

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While there are some positive impacts of lockdown and transport bans on non-infectious health issues, such as fewer road accident-related injuries and deaths<sup>115</sup> and decreased respiratory diseases like asthma<sup>116</sup> (although improvements may be offset by increased exposure to indoor air pollution in LMICs, such as from cooking fires<sup>1</sup>), people with NCDs are likely to face substantial negative impacts. Data and estimates from high-income settings are beginning to reflect impacts on cancer patients resulting from delays in screenings, diagnosis and treatment. In the UK for instance, a 60% drop in urgent referrals was seen in April,<sup>117</sup> and estimates now suggest reduced five-year survival rates,<sup>118</sup> and up to a 10% increase in cancer deaths over the next five years.<sup>119</sup> Similar systematic modelling on NCD impacts does not appear to exist yet for LMICs, and this remains a major gap. However, individual examples concerning NCDs have been documented. In India for instance, where 130 thousand people rely on regular dialysis treatment for kidney conditions to stay alive, there have been several reports of patient deaths due to dialysis equipment and centres being shut off, shut down, or inaccessible for a range of reasons.<sup>11</sup>

## **ACUTE AND CHRONIC INFECTIOUS DISEASE**

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NPIs, including hygiene measures, physical distancing and school closures have had positive impacts on some infectious diseases. The 2019-2020 influenza season in the Northern Hemisphere for instance, was six weeks shorter,<sup>120</sup> while the onset of winter has not triggered the expected rise in flu cases in the Southern Hemisphere.<sup>121</sup> In general however, significant negative impacts are expected in LMICs, as has occurred in the past. Deaths resulting from disruptions to malaria, HIV/AIDS and TB services during the West African Ebola epidemic for instance, nearly equalled the 11,300 Ebola deaths.<sup>122</sup> Lack of screening, diagnosis and treatment can trigger undetected epidemic flare-ups, requiring even more resources to 'catch up' once identified. In the context of COVID-19, models taking service disruptions and reduced access into account suggest sub-Saharan Africa, which bears 90% of the global malaria caseload, may see a doubling of malaria cases and



up to 700 thousand additional malaria deaths.<sup>10</sup> An additional 500 thousand AIDS-related deaths (including due to TB) has also been estimated.<sup>123</sup> Globally, an additional six million cases of TB and 1.4 million deaths could result, setting back gains by five to eight years.<sup>9</sup>

## **SEXUAL, REPRODUCTIVE AND NEWBORN HEALTH**

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During the West African Ebola outbreak, it is estimated there were nearly as many maternal and neonatal deaths and still births in Sierra Leone as Ebola deaths.<sup>124</sup> Evidence from the wider region suggests significant declines in the use of family planning services.<sup>125-127</sup> Similar concerns arise in the context of COVID-19. Although little context-specific evidence is yet available, that which is, is alarming. In Nepal for instance, institutional births reduced by over half during lockdown.<sup>128</sup> Broader modelling has estimated a 39.3%-51.9% reduction in coverage for maternal health services over the next six months would result in 56,700 additional maternal deaths across 118 LMICs with about 60% attributed to lack of safe birthing interventions.<sup>8</sup> Another study estimated an additional 28 thousand maternal and 168 thousand newborn deaths could result from just a 10% decline in relevant care coverage over a year, while 1.7 million women and 2.6 million newborns could suffer major complications across 132 LMICs.<sup>129</sup> A similar 10% decline in contraceptive use over a year may leave nearly 50 million women across 132 LMICs with unmet birth control needs, and result in 15 million additional unintended pregnancies.<sup>129</sup> Disruptions to abortion services could lead to an additional 3.3 million women resorting to unsafe procedures.<sup>129,h</sup> Sexual and gender-based violence has also risen considerably, with calls to support services increasing three-fold in some settings.<sup>67</sup>

## **CHILDREN'S HEALTH**

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A recent study suggests 1.2 million additional children under five could die over the next six months across 118 LMICs, a 45% increase in child mortality, if disruptions similar to what occurred during the West African Ebola outbreak are seen.<sup>8</sup> Increases in wasting due to malnutrition (which contributes substantially to under five deaths) may be a significant factor in this additional mortality.<sup>130</sup> Globally, an additional 10 million children may be pushed into acute malnutrition.<sup>131</sup> Vaccine-preventable diseases are likely to be another major cause of child deaths. As of April, 13.5 million children were thought to already have missed polio, measles, HPV, yellow fever, cholera and meningitis vaccinations,<sup>79</sup> while as many as 117 million may ultimately miss measles vaccinations alone.<sup>132</sup> More granular research from Karachi found a 63-90% decrease in routine immunisation visits during

lockdown in slums and poor suburbs of the Pakistani city.<sup>64</sup> Although visits resumed slowly following lockdown, children who missed their immunisations here, and indeed in other contexts, may ultimately never get them, or get them too late. Some countries are already reeling from outbreaks of vaccine-preventable diseases. Countries like the DRC - which has seen at least 348 thousand measles cases and 6,500 thousand child deaths due to measles in recent years, now face increased risk, while other countries face new outbreak risks resulting from COVID-19 associated disruptions.<sup>133,134</sup>

## **IMPROVING RESPONSE TO MINIMISE NEGATIVE IMPACTS ON OTHER AREAS OF HEALTH**

Health system capacity, disease burden and population health priorities vis-à-vis COVID-19 differ across country contexts. In the West African Ebola epidemic, malaria, HIV/AIDS and TB deaths nearly equalled Ebola deaths<sup>122</sup> and twice as many children died of measles as Ebola.<sup>135</sup> In the North Kivu Ebola outbreak (2018-2020), 2,287 people died of Ebola, while six thousand children died of measles in the country in 2019 alone.<sup>136,137</sup>

COVID-19 must put into perspective vis-à-vis other disease burdens, including with a medium- to long-term view, and local health needs must be prioritised. Prioritisation of health system resources should be set through meaningful participation of affected communities, health system users, and patients. This requires funding and support for dedicated spaces and staff to bring the public (including community members, civil society organisations and grassroots movements) and policy makers together for inclusive dialogue.<sup>138</sup> Past experiences from the HIV and West African Ebola demonstrated how community involvement was crucial to improving response.<sup>138</sup>

COVID-19 has shed light on health system capacity and the importance of preparing for and addressing co-morbidity. Emerging concerns about other infectious conditions (including HIV) and NCDs in their relation to COVID-19 create opportunities to incorporate these priorities into a more horizontal, health system approach. A positive experience drawn from the fight against HIV/AIDS is the importance of tracking the disease and its treatment and holding governments accountable for containing the spread and ensuring universal treatment coverage.<sup>139</sup> In the wake of COVID-19, commitments to NCDs, locally relevant contagious disease and health services (e.g. nutrition and maternal and child health), and their integration into universal and affordable primary health care should be a priority.<sup>16,17</sup> Global-level commitments to COVID-19 containment and eradication must be

made in the context of global support for health system strengthening. Without this, the disease may be eradicated in wealthier countries, but remain endemic in poorer ones, as has occurred with diseases such as cholera.<sup>13</sup> Below, we explore strategies to address broader health impacts as part of COVID-19 responses, and examples of health system approaches from past epidemics that may be useful.

## **MAKING INFORMED DECISIONS ABOUT TRADE-OFFS**

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National policymakers must weigh the trade-offs of decreasing COVID-19 transmission, symptom severity and mortality, and the emergence of broader health impacts. The Centre for Global Development has designed a calculator which helps countries quantitatively consider these trade-offs in terms of mortalities.<sup>140</sup> Alongside more granular and qualitative data on health impacts, such tools can provide input for more nuanced and contextualised prioritisation at national and sub-national level. However, trade-offs must also be weighed at the global level. The costs required to treat mostly older COVID-19 patients in HICs (using mechanical ventilators and oxygen therapies) should be considered in the context of the cost of saving the lives of hundreds of thousands of children from malaria, malnutrition and measles in LMICs. To be clear, all who require protection and care – regardless of age and location – should receive it, and an ideal scenario would see necessary and urgently needed investments being made to fill gaps and cracks rather than diverting resources. Nevertheless, current realities of scarce resources and inequitable distribution present ethical dilemmas and urge reflection on how preservation of life and well-being can be maximised given the situation.

## **IDENTIFYING DISRUPTION (AND ITS CAUSES) AT A LOCAL LEVEL**

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While service disruptions are monitored at country level (70% of countries claim to continue to monitor this<sup>141</sup> – see for instance the Nigerian Ministry of Health’s monitoring dashboard<sup>142</sup>) there is a need for more granular social science research to identify exactly what services are disrupted and why, and the localised direct and indirect impacts of this, to guide action. For example, the Social Science Analysis Cell (CASS) in the DRC supports the Ministry of Health’s response by carrying out real-time surveillance of perceptions of access, availability and use of health services. CASS works with other research and data scientists to bring social and behavioural science data from communities and HCWs together with existing health information system data. This is further triangulated with market data, NPI events and epidemiological trends in broader health outcomes. CASS’

Integrated Multidisciplinary Outbreak Analytics (IMOA) approach is critical to understanding the impacts of outbreaks and public health responses. IMOA has provided influential analyses for context-relevant action to address health impacts of the COVID-19 response (see **Box 1**).<sup>18,19</sup> Participatory approaches can also be used for the monitoring and evaluation of health indicators and response activities. For example, community members played a key role in determining what factors led to the containment of Ebola in Liberia during the West African epidemic.<sup>143</sup>

**Box 1. Using social science evidence: experience from the CASS in the DRC to reduce delays in treatment-seeking for Ebola**

During the 2018-2020 Ebola outbreak, the CASS approach resulted in 112 co-developed and actioned recommendations to inform response strategies and activities in DRC. Together with epidemiological teams, CASS achieved this by applying the IMOA approach and presenting comprehensive and integrated analysis through ‘response commissions’ – mechanisms identified by stakeholders to facilitate use of the evidence. Their analysis demonstrated that concerning treatment-seeking delays (5-12 days from symptom onset) appeared to be due to limited understanding of Ebola symptoms, lack of engagement or presence of survivors, and fear of Ebola Treatment Centres (ETCs). Study results were used to update messaging to include more common, less severe Ebola symptoms, and more detailed information (including by video) about the care provided at ETCs, and to facilitate increased engagement and dialogue between survivors and communities on the role of early treatment in survival. These changes contributed to reductions in delays in treatment-seeking (to an average of less than three days from symptom onset) over the course of the outbreak.

## **IDENTIFYING ‘CRITICAL’ SERVICES TO BE SUSTAINED AND ADAPTED**

WHO urges countries to maintain health services whilst managing COVID-19 risk, with guidance on how to do this depending on the status of local COVID-19 transmission.<sup>20</sup> Treatment delays are non-optional for conditions with potential severe medium- to long-term morbidity and mortality, and adaptation is crucial; difficult decisions may need to be made when allocating resources (e.g. non-COVID-19 infectious disease, cancer, pregnancy with diabetes, etc.).<sup>140,144</sup>

- **Triaging** - prioritising services according to what can and cannot wait from a medical and epidemiological perspective – has been reported by 66% of surveyed countries (for NCD services).<sup>145</sup> Prioritisation of scarce resources in LMICs should be made so as to address COVID-19 risk without undermining health system resilience. Identification and prioritisation of critical or essential services should be highly contextualised, taking into account available resources, disease burdens, and the trade-offs of de-prioritisation: expected excess morbidity and mortality in the short- and long-term, interruptions to surveillance and diagnosis, and difficulties of returning to baseline (as in the case of infectious diseases).<sup>140</sup> At the individual level, decisions on treatment may be made based on the ailment, and with consideration of trade-offs between early treatment and COVID-19 risk, such as in the case of cancer.<sup>146</sup> Triaging also helps identify when face-to-face interactions or phlebotomy are necessary. Hospital stays may be minimised, especially for people at high COVID-19 risk (e.g. with diabetes).<sup>144</sup> To further limit nosocomial infection risks, efforts to decentralise diagnostics (e.g. home testing kits for COVID-19 as well as for other health conditions) can be made.<sup>123</sup> Other alternative patient-engagement strategies are being adopted. For example, multi-month TB, HIV and malaria medications have been made available or dropped off at patients' homes, and where relevant, shifts to oral prescriptions have occurred.<sup>86,147</sup> Similar long-term prescription and delivery has also been leveraged for contraceptives and medications for NCDs such as diabetes, and bed nets for malaria prevention.<sup>148</sup> Targeted nutrition packages and therapeutic foods for pregnant and breastfeeding women and children, along with contraceptives, can also be included in food parcel deliveries and combined with income support for vulnerable populations.<sup>149</sup>
- **Telemedicine** - Telemedicine is being utilised by 58% of countries (although only 42% of LICs) to manage NCDs.<sup>145</sup> Phone calls or online mechanisms are used to diagnose patients, recommend treatment and follow up with patients, including to remind them of medication protocols.<sup>150</sup> Community engagement and risk communication activities online or through mobile phones can be used to keep citizens informed on risks, what they can do to mitigate them, what services are available to whom and where to find them, and to answer queries and take up suggestions.<sup>17</sup> However, access to telemedicine is highly unequal, with phones and internet being more prevalent in urban areas and wealthier contexts, and less accessible to certain social groups such as women. Efforts must be made to identify, communicate with and provide safe services to those excluded from digital pathways of care.

## HEALTH SYSTEM APPROACHES

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Cross-sectoral approaches (including both government and non-state actors) should integrate the management of COVID-19 within existing health programmes and structures which address communicable diseases, NCDs and other issues such as maternal and child health and nutrition.<sup>14,151</sup> Information systems, infrastructures, diagnostic laboratories, outreach and other activities should be shared across health programmes to break down siloes.<sup>15</sup> Health institutions must also be connected to other sectors including social protection and education to incorporate the social determinants of health.<sup>16</sup> There are positive examples of shifts from vertical to health system approaches. GAVI, a global alliance for vaccination that includes the UN, donors and civil society, has evolved its approach from top-down and parallel vaccine delivery systems to emphasise synergies and strengthening primary health care systems to enhance access.<sup>152</sup> Countries must be held accountable to commitments to primary health and Universal Health Care.<sup>16</sup>

Cross-disease approaches have been successful in other epidemics, catering for citizens' health priorities, and increasing uptake while decreasing stigma. In the 1990s cholera epidemic in Brazil, cholera-specific response activities generated stigma and impeded treatment-seeking, whereas broader services covering general diarrheal disease and infant health proved more acceptable.<sup>153</sup> Similarly, the HIV/AIDS project SEARCH integrated diagnosis and treatment of several acute and chronic diseases alongside HIV/AIDS including diabetes, hypertension, and prostate and eyesight problems into packaged community health services. This resulted in almost universal HIV/AIDS testing and treatment, and less associated stigma.<sup>17,154</sup> During the 2014-16 Ebola outbreak, 'community care centres' in Sierra Leone were deemed acceptable because they addressed other health needs perceived to be equally important (e.g. malaria treatment, oral rehydration, food, fever management and psychosocial support), and were managed by communities themselves.<sup>155,156</sup>

## COMMUNITY APPROACHES TO HEALTH

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Decentralised, community-based and people-led approaches are more likely to reach people suffering from broader health impacts and be accepted by communities.<sup>17</sup> Community-based approaches are already being implemented to address COVID-19-associated service disruption. In India, volunteer health workers are sharing tablets and phones, and going door-to-door (whilst maintaining physical distance) to find cases,

deliver ARTs, ensure treatment uptake, deliver food, and give advice on HIV and COVID-19 transmission.<sup>157</sup> In sub-Saharan Africa, community health workers are similarly delivering bed nets, medications, and supporting people to sustain needed treatment.<sup>158</sup> The lack of PPE however, has been an important challenge. Investing in financial resources and capacity building for community workers is crucial to prevent future outbreaks.<sup>16</sup> Supporting the development of alternative, safe forms of PPE made from locally available materials can also support HCWs and volunteers provide services in the immediate term. Community approaches can also, where possible, include homecare. HCW and community volunteer home support for many different health issues, including COVID-19, can minimise the need to visit health facilities.<sup>159</sup>

Community-based services are more likely to be successful if delivery strategies are led by patients, such as people living with HIV/AIDS or NCDs, or people living in areas affected by malaria or malnutrition. There is a need to decentralise care to these groups, including by ensuring their involvement in decision-making and strategy design, although importantly, in ways that do not simply transfer responsibility to them and add additional burden to their economic and health challenges. Meaningful participation in health policy, including but not limited to epidemic response, is a prerequisite for ownership and acceptance, and needs to be supported with adequate financial and technical resources, and accountably supported by the state and humanitarian actors.

## **LINKING COMMUNITY AND ALTERNATIVE HEALTH PROVIDERS AND SOCIAL MOVEMENTS FOR HEALTH SYSTEM-WIDE APPROACHES**

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Linking networks across development interventions more broadly, and within health systems, has yielded positive results in other epidemics. For instance, networks of disaster risk volunteers have been deployed to support health activities.<sup>160</sup> Similarly, HIV/AIDS volunteers have supported Ebola responses, building on their previous experience.<sup>161,162</sup> In Eswatini (Swaziland), HIV/AIDS activists mobilised with the cervical cancer movement, and together supported a broader platform that reduced prevalence and stigma.<sup>15</sup>

Engaging with formal and informal community groups has also proven fruitful in past epidemics, including to deliver care and support other community-based activities. Building on networks of existing civil society organisations (unions, professional associations, religious and women's groups etc.) and empowering them to lead elements of response proved crucial during epidemics of Ebola, influenza and cholera.<sup>162-164</sup>

Linking with alternative health providers is also important, particularly in pluralistic health systems where private clinics, pharmacists, informal drug sellers, traditional or faith healers, herbalists, and others may serve as a first port of call for large proportions of – and often vulnerable – people. In the context of COVID-19, pharmacists have proven effective partners in the management of chronic conditions and in promoting medication adherence.<sup>165</sup> With the necessary resources and skills for infection prevention, alternative health providers can support in triaging efforts, surveillance, diagnosis and treatment for a wide array of medical issues beyond COVID-19.

## CONCLUSION

In just a few months, COVID-19 has fundamentally changed the ways in which our social, economic and political systems operate. Not least among these are our health systems. While some changes have been necessary – for instance, to prevent in-person health service encounters from becoming sites of COVID-19 infection and to allocate scarce resources – they have not necessarily been well judged or executed. The fallout from the interactions between such response measures, pre-existing vulnerabilities and wider impacts of the pandemic have led to myriad new challenges and barriers for health systems and for people who need care. The lack of attention to the broader health impacts of vertically oriented measures, particularly those imposed in the first few months – but also other elements of public health responses which, while less directly disruptive than ‘lockdowns’, may still have blind spots – has resulted in and will continue to cause significant harm to health and wellbeing. LMICs are particularly vulnerable as their substantial disease burdens and historically weak health systems present significant challenges. In addition to documenting some of the pathways and evidence of these impacts, this review adds to a growing chorus of voices calling for more holistic approaches to health in the context of COVID-19, but also beyond it, and implores urgent action to mitigate tragedy in both the short- and long-term.

## NOTES

<sup>a</sup> Impacts on other areas of health stemming from responses to outbreaks of infectious disease such as COVID-19, are often referred to as ‘secondary’ or ‘collateral’ impacts. While these descriptors are helpful in indicating to readers exactly what is meant, they also have the effect of further marginalising health issues beyond COVID-19, the disease at which response is primarily targeted. However, these health issues may not be secondary at all to the people who face them, and indeed entire populations may be more at risk of



them than to COVID-19 itself. For these reasons, we have opted to refer to the 'broader health impacts' of response, or to impacts on 'other health areas'.

<sup>b</sup> While the burden of disease in LMIC regions such as sub-Saharan Africa continue to be dominated by infectious and nutritional diseases, as well as maternal, neonatal and child health issues, the prevalence and impact of NCDs is rising fast in LMICs, particularly as populations in these settings live longer.<sup>25</sup> Due to limited health system capacity, people with NCDs in LMICs are more likely to suffer early death and morbidity than people with NCDs in wealthier countries.<sup>26</sup> Generally, there remains limited quality and specific data on NCDs in LMICs, obscuring true burdens, and hindering efforts to prevent and control them in these settings.<sup>27</sup>

<sup>c</sup> New information about the lack of immunity following infection<sup>34</sup> suggests outbreaks may recur in the same populations. Re-emerging outbreaks may retrigger restrictive measures, further amplifying negative impacts on other areas of health.

<sup>d</sup> Those who rely on lipreading for instance, may find it difficult if everyone around them is wearing a face mask.

<sup>e</sup> Missing even one dose of TB medication can result in the infection developing drug resistance.

<sup>f</sup> Disruptions to transport systems might include geographical quarantines (being unable to leave or enter an area or cross borders), the scaling down or stopping of public (or even private) transportation systems, or the imposition of curfews.

<sup>g</sup> A number of media outlets have been tracking excess deaths around the world. To read about the excess deaths represented in Figure 1 and across a range of other settings, including HICs, see: Dale, B. & Stylianou, N. (2020) What is the true death toll of the coronavirus pandemic? *BBC News*.

<https://www.bbc.co.uk/news/world-53073046>. The Economist also usefully tracks excess mortality deaths: <https://www.economist.com/graphic-detail/2020/07/15/tracking-covid-19-excess-deaths-across-countries>

<sup>h</sup> This calculation is based on a baseline rate of pregnancy, and thus does not account for any possible increase in demand for abortion that might result from increases in unintended pregnancies.

## ADDITIONAL RESOURCES

- Collateral impacts calculator from Center for Global Development (CGDev) <https://www.cgdev.org/blog/tool-estimate-net-health-impact-covid-19-policies>
- Inventory on evidence of broader health impacts compiled by CGDev [https://docs.google.com/spreadsheets/d/1\\_MBh3FmuSZK-9UQsrBYaYtIHdCqnez9oqJ8t216LkbE/edit#gid=484814669](https://docs.google.com/spreadsheets/d/1_MBh3FmuSZK-9UQsrBYaYtIHdCqnez9oqJ8t216LkbE/edit#gid=484814669)
- WHO Maintaining essential services guidance <https://www.who.int/publications/i/item/10665-332240>
- Revealing the toll – WHO tool <https://www.who.int/publications/i/item/revealing-the-toll-of-covid-19>
- CASS social science questions in COVID-19 brief <https://www.unicef.org/drcongo/media/4111/file/CASS-Brief1-Questions.pdf>
- CASS IMOIA framework <https://drive.google.com/drive/u/2/folders/1SEdDXyFcZNqTctZkUtiPECi9ton1WFnO>

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