Prevention in COVID-19 time: from failure to future

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ABSTRACT

The COVID-19 pandemic has developed as a consequence of sheer prevention failures, leading in many countries to a sizeable number of deaths and over-saturation of intensive care units. This triggered the imposition of generalisd quarantine ('lockdown') of variable stringency in different countries: with the decrease of the epidemic, the lockdown is now gradually relaxed and replaced by tight tracing and isolation of new cases and their contacts. Prevention, however, remains not a constant priority, as the objective may be avoidance of saturation of intensive care beds or more generally of healthcare facilities rather than the minimisation of the disease incidence. This combined with the fact that notwithstanding repeated warnings in past years the epidemic occurred as a surprise denotes a way of thinking in which prevention is an important option but not a guiding principle of choice and action within the health system. To modify this way of thinking and place prevention at the core of the system, non-negligible changes are required: they may become possible in light of emerging hazards like new viruses and climate change, huge economic costs of failed prevention and initial changes in the health system already induced by the COVID-19 epidemic.

> It is better to be healthy than ill or dead. That is the beginning and the end of the only real argument for preventive medicine. It is sufficient.
>
> Geoffrey Rose, 1992.

FAILURE AT THE START

Nobody knows how the COVID-19 pandemics and its health and social consequences will evolve beyond the shortest term, but certainly it is already inscribed in the records of historical epidemics and of prevention failures. In the midst of an agonising fight to salvage lives, 13 clinicians from the hospital of Bergamo, a highly affected spot in Italy, wrote a concise article[1] worth thousand pages of health policies or 'value-driven management' analyses. They stated: 'Western healthcare systems have been built around the concept of *patient-centered care*, but an epidemic requires a change of perspective toward a concept of *community-centered care*. What we are painfully learning is that we need experts in public health and epidemics, yet this has not been the focus of decision makers at the national, regional, and hospital levels.... This disaster could be averted only by massive deployment of outreach services. *Pandemic solutions are required for the entire population*, not only for hospitals'.

Tragically population solutions came late and inadequate, not because of people (actually public health front-line professionals fought hard the epidemic as their clinical colleagues did) but because of a health system without a powerful prevention pillar: in Italy as in most countries. The emergency population solution to relieve the hospital critical care services, swamped by patients inflow, has been to impose mass quarantine measures ('lockdowns') of variable stringency across countries. In areas where numbers of new cases and, consequently, patients in need of critical care have progressively dropped to one-digit to two-digit figures, a gradual lockdown relaxation is taking place (irresponsibly this is also implemented in places, particularly in the American continent, where the epidemic is still flaring[2]). In many countries, particularly in Europe, the epidemic control rests at the time of writing (May 27) and for months ahead on interpersonal physical distancing and barrier measures, testing for virus presence to detect and isolate new cases and their traced contacts and extensive testing of selected groups at increased risk of being infected and of infecting, such as health professionals and nursing home or prison residents and staff.

TWO LATER PROBLEMATIC EXAMPLES

Prevention is, however, often at bay even in post-lockdown time. Consider as an example the numerous models[3 4] forecasting scenarios of the epidemic evolution under different control measures: they mostly use hard endpoints such as deaths or patients in critical care, expressing the heaviest disease load on the population. Often, however, saturation of critical care beds, obviously to be avoided, is suggested as key reference to assess whether the epidemic is under control. This misunderstands and misses the objective of preventive measures, to minimise the incidence of new cases, and misconstrues the pertinent alert criterion for triggering preventive action changes when the objective is insufficiently attained: a threshold number of new cases and/or clusters and not of occupied beds (as a counterexample the Robert Koch Institute in Berlin reports daily[5] a series of summary statistics and indicators, focusing on the time trend of incident cases via the Rt statistic).

Herd immunity is another example worth commenting. For the SARS-CoV-2 virus, the average number of secondary infected cases that an infected person generates ('basic reproduction number' or R0) in a population composed only of susceptible people has been estimated, for example, in Italy, at around 3.[6] If part of the population becomes non-susceptible (immune), the virus has less opportunities for human-to-human transfers and when the proportion of immune persons in a population is

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roughly equal to (1−1/R0) the virus propagation stops.[7] With a R0≈3, it means ≈66% of the population, a proportion reachable either by vaccination (not available) or by people getting the disease and becoming naturally infected. Letting the latter course to develop was the policy initially and openly envisaged by the UK government as the way out of the epidemic,[8] a policy soon abandoned in favour of containment measures (such as physical distancing) when the government was confronted with the projected number of COVID-19 deaths implied by this 'natural experiment'. Yet, short of having reached the 60–70% figure, the epidemic is bound to reappear when all containment measures are removed: the key prevention issue becomes how to keep low the incidence rate of new cases, reaching at slow pace over maybe years, the 60–70% target by control measures socially acceptable over an extended time. Sceptics argue[9] that attempting such a prolonged balance between the forces of the virus and the forces of socially sustainable control measures is doomed and 'futile', as the 60–70% must be reached anyway, and our task is 'to concentrate on giving the unfortunate victims optimal care': but it makes a big difference whether there are a lot of victims today or spread over a long period (even setting to zero the probability that time makes available a vaccine or new drugs). Hence, I regard as scientifically sound to acknowledge our ignorance about this new virus and to advance learning week after week, or, as Peter Piot said,[10] 'learning while we are sailing', from the individual and comparative experience of countries implementing the post-lockdown measures of control, aimed at keeping the rate of incidence at the lowest feasible level.

TOWARD THE FUTURE

The high likelihood of an epidemic disaster has been repeatedly emphasised in the last two decades, most recently in the 2019 WHO-World Bank document[11] on global (un) preparedness for health emergencies: the fact that it has occurred as a surprise (including to epidemiologists mostly looking in other directions) cannot be understood other than as the product of a way of thinking in which anticipation and prevention are important options but not constant guiding principles of choice and action. Yet, the objective of whole population health, the 'health for all' message, can only be attained and maintained by applying the 'prevention first' principle to place in perspective, order, prioritise and organise the multitude of components of a health system and direct its inter-sectorial relations with other society activities relevant to health (typically education, work, housing, environment). The COVID-19 provides a negative and clear demonstration: once prevention has failed the whole population health is affected, not only the health of those hit by the disease. The excess mortality certified as due to COVID-19 has in fact been found accompanied by substantial excess mortality for non-COVID-19 causes, for reasons under investigation[12]; actual threats to mental health have been reported[13] and potential indirect threats to mother and child health identified.[14] Over and above local variations, the failure to block the virus spread has been generalised across the world, with very few 'felicitous' exceptions like South Korea or Taiwan: short of becoming the forerunner of major health emergencies this calls for reconsidering and repositioning prevention at the core of health systems. This is a tall order as that core has been increasingly filled by PPPP medicine: which unfortunately stands less for 'Predictive, Preventive, Personalised, Participative' than for 'Privatise and Push Productivity for Profit'. In the neo-liberal economic environment prevailing since the 1980s, public hospitals and other healthcare facilities, strained by public funding, have either delegated some tasks to the private sector or adopted management modes akin those of private enterprises, pushing productivity by increasing supply of services while containing costs, mainly for staff. This operating mode promotes competition and the short(er)-term over co-operation, integration and long-(er)-term, basic to prevention strategies and practices. Changes are indispensable if prevention is to become central within the health system. Several factors play now in favour of this evolution.

First, *emerging hazards*. COVID-19 has shown that health hazards with high-impact effects exceeding present biotechnology responses exist and can only be fully prevented at their sources. New species of potentially pathogenic viruses continue to accrue[15] for which the biotechnology response of vaccine may come forward (as for Ebola) or not (as for HIV) and certainly most effects of the other major emerging hazard, climatic change, cannot be contrasted by vaccines.

Second, *economy*. Beyond direct health effects, hazards not prevented may produce, as SARS-CoV-2 does, major damages, disproportionally affecting the already less privileged, that largely exceed in economic value, the investments required for prevention.

Third, *seeds of change*. After the initial failure, a strong rebound mobilisation of all sections of society has in most countries occurred to fight COVID-19, including a sharply increased commitment of all prevention services, whatever their labels, specific functions and extent of territorial coverage. Under the most optimistic hypothesis, the current post-lockdown phase of epidemic control will last at least until next year, providing a window of time to develop new or reshaped prevention services based on ongoing experience and seeds of change.

Fourth, *global response*. A review of the global response to the epidemic, as recommended in May by the World Health Assembly,[16] can only confirm and extend, through the analysis of multiple prevention failures that allowed the virus to spread, the prevention primacy not only within countries but at the level of multilateral international cooperation, notably within the WHO agenda: this can, reciprocally, support the priority of prevention in national health programmes.

After the failure, there is indeed a future for prevention, and with it for 'health for all', but it must be acted upon starting now.

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