The human qualities needed to complete the global eradication of polio

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Abstract Although the 99% decrease seen in global polio incidence between 1988 and 2000 represented remarkable progress towards polio eradication, tackling the last 1% of polio has proved tantalizingly difficult. Pockets of endemic transmission currently persist both on the border between Afghanistan and Pakistan and in northern Nigeria. These pockets have permitted the reinfection of countries that were previously polio-free. Global strategic plans for polio eradication set out the activities, resources and financing needed to overcome the managerial, technical and security challenges faced by those tasked with the interruption of poliovirus transmission. However, polio eradication also depends on the less tangible but equally important human qualities of energy, realism, articulacy, determination, imagination, collaboration, adaptability, tactical awareness, innovation, openness and nimbleness (the initial letters of which give the acronym "ERADICATION"). By paying attention to these human qualities, the stakeholders involved may be more likely to achieve global polio eradication.

Abstracts in عربي, 中文, Français, Русский and Español at the end of each article.

Introduction

Progress towards polio eradication has been remarkable. The annual number of polio cases recorded worldwide fell by 99% between 1988, when the Global Polio Eradication Initiative (GPEI) was established, and 2000.[1] However, tackling the last 1% of polio has proved difficult.[1] Although the number of countries where polio was endemic fell rapidly after the launch of the GPEI, from at least 125 in 1988 to 20 in 2000,[1] progress in eradicating polio has since slowed. In 2006 polio was still endemic in Afghanistan, India, Nigeria and Pakistan and only India has been declared polio-free, in 2012.[1,2] In the last few years, travellers from the few countries where polio remains endemic have carried poliovirus into countries that were polio-free.[2] Such reintroduction of the virus was detected in 23 previously polio-free countries in 2009–2010, in the World Health Organization's (WHO's) European Region (which was certified as polio-free in 2002)[2] in 2010, and in China in 2011.[3]

Since 2009, efforts have intensified to identify what it will take to interrupt poliovirus transmission in the countries where polio is still endemic or where transmission has recently reappeared. In an independent evaluation conducted in 2009, the main managerial, technical and security challenges faced by those attempting to clear the remaining pockets of transmission (then on the Afghanistan–Pakistan border, in northern India and in northern Nigeria) were identified.[4] The GPEI's Strategic Plan for 2010–2012 subsequently set out the activities, resources and financing needed to overcome these challenges.[5] In 2010, the GPEI established the Independent Monitoring Board to monitor and guide the plan's progress. The Board's chairman, Sir Liam Donaldson, stated that although "polio eradication is on a knife edge", it was "still feasible, but more urgency is needed to complete the task".[6,7] Reflecting this urgency, the World Health Assembly declared in May 2012 that the completion of polio eradication constituted a "programmatic emergency for global public health", and an appropriate Emergency Action Plan for 2012–2013 was developed.[8]

The GPEI has concentrated on the technical considerations for stopping poliovirus transmission, to the neglect of the key human qualities that will also be needed. The Independent Monitoring Board has advised that "the style and approach to management of the global programme need reorientation"[7] and has warned that the GPEI runs the common risk "for change management programmes to pay too little attention to the human factors, to over-orientate themselves to the technical elements of a challenge".[7] The aim of this paper is to help redress the balance by identifying the human qualities that have contributed to the progress made so far and that need to be highlighted in attempts to eradicate polio. These qualities are considered first in relation to embracing the goal of polio eradication and second in relation to overcoming the main roadblocks to the interruption of poliovirus transmission.

Embracing the goal

All landmark achievements in science and its application require *imagination*. For example, although the enthusiasts for human genome sequencing in the 1980s were often considered wildly optimistic or hopelessly deluded, sequencing of the human genome was completed in 2001[9] thanks, in large part, to the imagination and vision of the enthusiasts. Similar imagination and vision – as well as a sound strategy and a strong likelihood of technical feasibility – are needed by those attempting to globally eradicate an infectious disease. Efforts to eradicate malaria, yaws and yellow fever all foundered on the "rock" of doubtful technical feasibility. Polio eradication is, however, based on a sound and adaptable strategy, similar to the one used to eradicate polio in the Americas in 1994 (Table 1), and on technical feasibility.[10,11]

A few years ago, the persistent pockets of poliovirus transmission in the Indian states of Uttar Pradesh and Bihar were regarded as a "stress test" of the technical feasibility of polio eradication. Certain technical difficulties in achieving high enough immunity levels to halt poliovirus transmission in the affected areas were observed. One was low vaccine immunogenicity. These problems had been exacerbated by

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Table 1. **Key elements of the global strategy for polio eradication, 1994**

Element	Details
Improved routine immunization	Population immunity against polioviruses is optimized by ensuring that as many children as possible receive the recommended three or four doses of polio vaccine as early as possible in infancy.
Supplemental mass immunization	Pools of susceptible children accumulate. Such children were either not reached by routine immunization or did not develop adequate immunity despite receiving the recommended three or four routine doses. The prevention of polio outbreaks depends on delivering multiple supplemental doses of polio vaccine each year through supplementary immunization activities, such as national immunization days and large-scale house-to-house "mop-up" campaigns.
Poliovirus surveillance	Nationwide surveillance for acute flaccid paralysis involves the reporting and virological investigation of all cases in children. Surveillance provides information for programmatic action through early identification of outbreaks, assessment of programme effectiveness and guidance of eradication efforts.
Outbreak-response capacity	An effective outbreak response requires adequate public health infrastructures, logistics and vaccine supply in each country, coordinated globally by the WHO.

WHO, World Health Organization.
Source: Hull et al. [10].

Table 2. **Key lessons learnt from the Global Polio Eradication Initiative and tactical implications, 1998–2008**

Key lessons	What is different in 2010–2012?
Immunity thresholds needed to stop polio differ geographically, being higher in Asia than in Africa.	Oral vaccine campaign and monitoring strategy tailored to local circumstances in different countries.
Immunity gaps allow virus to persist in smaller areas and subgroups than thought.	District-specific plans and capacity Special tactics for underserved populations Independent monitoring of campaigns
Routes of poliovirus spread and outbreaks are now largely predictable.	Immunization systems strengthening New outbreak response standards Preplanned, synchronized campaigns
Optimizing the balance of the monovalent oral vaccines is much more difficult than anticipated.	Use of bivalent vaccines of types 1 and 3 Balancing supplementary immunization activities involving monovalent, bivalent and/or trivalent vaccines

Source: Global Polio Eradication Initiative[5].

behaviours and conditions that dramatically enhanced the local populations' vulnerability to poliovirus infection, such as indiscriminate defecation, contaminated water supplies, high population densities, malnutrition, unclean supplementary infant feeds, high birth rates and inter-birth intervals of less than 1 year.[4] Despite all of these conditions, India was declared polio-free in February 2012; this provided definitive evidence of the technical feasibility of polio eradication.[12]

Within the overall strategy, *tactical awareness* is needed to harness the full benefits of an improved understanding of the relationship between population immunity and interruption of poliovirus transmission. One reason for the considerable inter-country variation in the progress made towards polio eradication is that the level of population immunity needed to halt the transmission of wild poliovirus can differ substantially between geographical areas. The GPEI's Strategic Plan for 2010–2012 reflected the observation that, to stop local transmission of poliovirus, the percentage of the population that needs to have poliovirus-specific immunity is higher in Asia (>95%) than in sub-Saharan Africa (80–85%).[5] Eradication efforts in Asia are currently focused on the few districts and subdistricts where transmission, though highly localized, persists. The aim is to achieve the high immunity thresholds needed to halt transmission in Asia through frequent campaigns of supplementary immunization activities with exceptionally high coverage. Although the aim in Africa is also to achieve high coverage with supplementary immunization activities, these will have to be run over relatively few campaigns and a relatively wide area to decrease the risk of recurrent outbreaks following importation of poliovirus into previously polio-free areas.

In some settings, particular population subgroups and communities – e.g. nomads, migrant labourers and other highly mobile groups of people, those with relatively poor access to public services and those (often minorities) who otherwise make scant use of public services – play an important role in sustaining polio transmission. In discussion with relevant local leaders, tailored approaches have been developed, for implementation by special polio-eradication teams, to address the special needs of such groups. The vaccination of travellers at crossing points between polio-endemic and polio-free countries, and on the border between the polio-endemic countries of Afghanistan and Pakistan, is a useful approach.

The GPEI has shown tactical awareness by recently taking on board the lessons learnt through more than 20 years of experience in strategic planning. For example, the GPEI's Strategic Plan for 2010–2012 reflects four key lessons learnt (Table 2), each with a specific tactical implication.[5]

Interrupting transmission

The stakeholders' *determination* to overcome operational barriers to the interruption of poliovirus transmission is complemented by key human qualities that are relevant to each of the technical, managerial and security challenges identified during the independent evaluation conducted in 2009[4] in the then-endemic areas in northern India and northern Nigeria and on the Afghanistan–Pakistan border (Table 3).

Technical challenges

Need for more research

The success of global polio eradication hinges on *innovation* for several reasons. First, when adapting an older strategy, such as that developed in the Americas in the 1990s, for current use in other settings, not all of the obstacles that may be encountered can be anticipated. An

Table 3. **Main challenges to the interruption of poliovirus transmission, 2009**

Category	Challenges
Technical	Need for more research on immunological basis of multiple vaccinations, ages of children to be vaccinated, and optimal use of new oral and inactivated vaccine constructs
	Too little attention paid to post-eradication strategies that may ultimately determine the success of the GPEI
Managerial	Low levels of routine immunization, with inadequate collaboration between GPEI and the Extended Programme on Immunization
	Inadequate commitment and deployment of resources at local, grass-roots level
	Little GPEI authority or control over poorly-performing local programmes, and complicated GPEI administrative structure globally and within countries
	Disparities in country support by GPEI
Security	Need to develop programme capacity to adapt tactics to operate with sufficient safety in conflict-affected areas and reach target groups

GPEI, Global Polio Eradication Initiative.
Source: Global Polio Eradication Initiative[4].

example of such an unexpected obstacle is the relatively low efficacy of oral polio vaccine observed in northern India.[13] This obstacle was, however, successfully overcome by an innovation: the development of a new bivalent vaccine. Second, the decades needed to achieve eradication provide time for important developments in, for example, diagnostics, vaccinology and cold-chain technology that can enhance programme effectiveness and reduce costs. Third, potentially important aspects of the pathogen or its control that were unrecognized at the outset of the eradication programme (e.g. vaccine-derived polioviruses) can be investigated and identified as the programme progresses. In the late stages of polio eradication, as the transmission of wild poliovirus is interrupted, the proportion of polio cases caused by circulating vaccine-derived polioviruses is expected to increase.[14] To try to resolve this problem, the plan is to switch from trivalent oral vaccines to the bivalent vaccines that are more genetically stable. The use of all oral polio vaccines will be stopped once the transmission of wild poliovirus is interrupted.

Since the GPEI's inception, the key stakeholders have built the GPEI's capacity to pursue an active and wide-ranging research agenda. For example, the United States Centers for Disease Control and Prevention have contributed epidemiological and virological expertise, and the Bill & Melinda Gates Foundation and the Global Alliance for Vaccines and Immunization have financed several important research projects, particularly for the development and testing of new vaccines. From its base at WHO's headquarters in Geneva, a dedicated GPEI research and product development team has successfully coordinated the network of vaccine manufacturers, academic research institutions, not-for-profit research groups, public health laboratories and regulatory agencies worldwide that has facilitated the development, testing and licensing of new vaccines, diagnostics and related technologies, as well as operational research.

The importance of fast-track vaccine development was shown by the successive appearance of new vaccines aimed at enhancing the impact of each immunization contact in areas of highly efficient poliovirus transmission. In the early 2000s, despite high vaccine coverage through a combination of routine and supplementary immunization activities, transmission was being sustained in areas of Egypt and India where population densities were particularly high and sanitation was poor. Monovalent oral polio vaccine of type 1 was found to confer substantial gains in immunity compared with the trivalent vaccine[15] and, after fast-track development, testing and licensing, was in use in Egypt and India by 2005. A similarly rapid response to the recent demonstration of good immunogenicity induced by bivalent vaccines of types 1 and 3[16] has resulted in rapid deployment of such vaccines in the field.

In the late stages of polio eradication, the GPEI will need to promote and support innovation to address remaining problems and issues, such as the immunological basis of multiple vaccinations, the ages of children to be vaccinated, and the optimal utilization of new oral and inactivated vaccine constructs. In the eradication of polio from the areas of persistent transmission in Asia, a key research challenge is to improve vaccine effectiveness and reduce the thresholds of population immunity required to stop poliovirus circulation. Operational research to improve programme performance should be tailored to the specific challenges of each remaining endemic area (e.g. improving lot quality assurance sampling in Nigeria) and the resolution of key eradication issues such as the use of short-interval additional doses of oral vaccine for outbreak response.[4] Improvements in the GPEI's capacity for social science research could help to obviate the problems arising from unfounded fears over vaccine safety, particularly the persistent myths, rumours and misconceptions in Nigeria and Pakistan that contribute to vaccine refusal.[4] Further focus on practical programmatic research is needed to improve the quality of vaccine campaigns and surveillance. Although we may have the data that show where vaccination coverage is poor, we still need to understand why coverage is poor in certain areas and to identify and implement effective solutions.[7]

Post-eradication strategies

The interruption of wild poliovirus transmission globally is not the end of polio, but it is the beginning of the end. Two important risks will need to be managed: the reintroduction of wild poliovirus and the re-emergence of circulating vaccine-derived polioviruses. The success of post-eradication strategies, like that of the pre-eradication strategies, hinges on *innovation*. In leading the GPEI's programme of work on post-eradication risk management, WHO is continuing its multi-pronged programme of research, new product development, strategy formulation and policy development.[5] This programme has four main aims: (i) to characterize in detail the primary risks that may threaten polio eradication in the long term; (ii) to develop strategies for mitigating each of the long-term risks; (iii) to establish the mechanisms needed to coordinate these risk management strategies internationally; and (iv) to develop new products to manage the risks associated with a halt in the use of oral polio vaccines. In 2013, WHO will finalize the Polio Eradication and Endgame Strategic Plan for 2013–2018.

Managerial challenges

Levels of routine immunization

Global eradication of any disease that crosses national borders requires international *collaboration*. The solidarity between nations that has permitted tremendous progress to be made towards polio eradication must be reinforced in the late stages of eradication and the post-polio era.[17] Such solidarity is a common strand running through several health initiatives, including the Expanded Programme on Immunization. In the independent evaluation that was conducted in 2009, low levels of routine immunization – which were partially attributed to inadequate collaboration between GPEI and the Expanded Programme on Immunization – were identified as one of the main challenges to the successful interruption of poliovirus transmission.[4] By exploiting all of the opportunities for collaboration between the GPEI and the Expanded Programme on Immunization, it should be possible to improve the performance of both initiatives. Such collaboration will be essential in the polio "endgame strategy" and also in the post-eradication era, when reliance on inactivated polio vaccine will make house-to-house supplementary immunization activities more difficult. Careful consideration of the merging or overlapping of the measles initiative with the final and post-eradication phases of the GPEI might identify potential gains in efficiency for both initiatives.

Following the GPEI's launch in 1988, *energy* and enthusiasm were initially maintained by the dramatic early successes achieved in those parts of the world where polio eradication efforts were rapidly scaled up. In these areas, the mean time from strategy initiation to the interruption of the transmission of indigenous wild poliovirus was only 2 to 3 years. The few areas of the world where polio remained endemic by the mid-2000s were the exceptions to this rapid progress. There were serious setbacks in subsequent efforts to eradicate polio from the endemic areas of southern Afghanistan, northern India, northern Nigeria and Pakistan, as well as from the nearby countries where transmission was re-established. For example, the suspension of polio vaccination in Kano state in northern Nigeria in 2003 was followed by the international spread of poliovirus from Nigeria and the consequent reinfection of 18 countries (directly or via another country) by mid-2005.[18] Little progress appeared to be made in Afghanistan, India, Nigeria or Pakistan between 2004 and 2008, and 11 new outbreaks of polio occurred in 2010.[19] These setbacks proved a test of both the stakeholders' energy and their enthusiasm.

Although transmission of wild poliovirus had not been interrupted globally by the initial target date of 2000, the substantial progress made initially in implementing strategies and reducing the number of countries with polio endemicity reinvigorated eradication efforts. However, any prolonged eradication effort runs the risk of fatigue at international and national levels. At the local level, community and health staff fatigue may be worsened by difficulties in the efficient delivery of routine GPEI and other immunization activities in dangerous environments, the often high frequency of supplemental activities, and the proliferation of vertical donor initiatives that directly or indirectly affect immunizations.[4] Fatigue often leads to poor campaigns and then to a vicious circle of lack of progress and waning confidence. In contrast, the energy and enthusiasm arising from positive developments, such as the declaration that India was polio-free in February 2012, can promote a virtuous circle that encourages further progress and the confidence to overcome any remaining barriers to eradication.

The human quality of *realism* enables the translation of what is feasible in theory into what is achievable in practice. It was the successful adaptation and implementation of the GPEI's main strategy in the WHO's Western Pacific Region that convinced many decision-makers of the "operational" feasibility of polio eradication. However, a key lesson arising from the late stages of the GPEI is that proof of technical feasibility in one setting does not necessarily equate to operational feasibility in all settings. Evidence of the technical feasibility of a particular eradication strategy in any area does, however, provide the basis for realistic application and adaptation of that strategy to the conditions in different settings. In the final drive towards global polio eradication, such tailored approaches will be needed in polio-endemic areas and any countries where poliovirus transmission reappears.

Commitment of resources

Those involved in GPEI at all levels, from global to local, must show *articulacy* in advocating for the full deployment of the required resources at the local, grass-roots level. Operational barriers at the grass-roots level can only be overcome if the GPEI's stakeholders fulfil their financing commitments, which include the filling of the GPEI's budget shortfall for 2012–2013 – estimated to be 700 million United States dollars (US$) – by increasing domestic and international funding.[20] At the global level, the justification for further financing is sound, as failure to achieve the GPEI's ultimate goal would have significant and adverse humanitarian and economic consequences. If the GPEI's activities had to be halted early, hundreds of thousands of children would be paralysed for life by polio within a decade and billions of dollars would have to be spent on outbreak response activities, the rehabilitation and treatment of polio cases, and the associated loss of economic productivity. The incremental net benefits of achieving global polio eradication, aggregated over the period 1988–2035, have been estimated at no less than US$ 42 billion.[21] Successful eradication will ensure that the 21-year financial investment made so far will be protected in perpetuity.

At the national level, GPEI's advocacy efforts have often focused on engaging national and subnational leaders, especially in countries with weak health systems. Such efforts help the GPEI to obtain access to the multisectoral (e.g. human, transport and communications) resources that it needs to meet the logistical challenges it faces in running rapid and widespread polio vaccination campaigns. By focusing political engagement on the national leaders of countries in which political power is highly centralized, accountability for the progress of the vaccination campaign and the resources used can often be promoted. In large federated republics (e.g. India, Nigeria and Pakistan), however, the subnational leaders who control resources at the regional level also have to be important targets of the GPEI's advocacy. Such subnational leaders may ultimately control the fate of a global eradication effort, as famously demonstrated by the prolonged suspension of polio vaccination by the leaders

of Kano state in northern Nigeria in 2003.[22] In the early phases of the GPEI, Rotary International's establishment of National PolioPlus Committees in most poliovirus-infected countries greatly facilitated the GPEI's efforts to establish strategies, advocates and processes to access and engage subnational leaders. In the late stages of polio eradication – as the impact of polio becomes less visible and concern over vaccine-related polio grows – it will become harder for local community members involved in mobilization and immunization to articulate convincing reasons for the immunization of each child.

GPEI's authority and control

Openness and accountability at all levels of the GPEI will promote effective and efficient performance. At the national level, GPEI has had little authority or control over those local implementing entities that are performing poorly. This has been a huge constraint on progress.[4] Greater openness on the part of national and subnational authorities would put the spotlight on areas in which the quality of eradication activities is currently insufficient to interrupt poliovirus transmission. This would enable collaborating partners to concentrate extra resources and enhanced technical assistance where they are most needed. The Independent Monitoring Board already monitors the progress of the Strategic Plan for 2010–2012 against major milestones and process indicators and advises countries and partner agencies on any corrective actions that are needed.[23] Independent quarterly assessment of indicators of programme performance for each polio-infected country will enable prompt remedial action wherever underperformance is identified. In treating polio eradication as a global health emergency, the Independent Monitoring Board presents its reports "frankly, objectively, and without fear or favour".[7] Evidence of the Board's frankness can be seen in its recommendation that "Pakistan should fundamentally rethink its national emergency plan, focusing on what can be done to enhance meaningful accountability".[7] Openness on the part of the GPEI's senior management is a requirement for the consultation and decision-making needed for the GPEI to streamline its administrative structure, and to promote effective and efficient performance.

Box 1. **The needs identified by the Global Polio Eradication Initiative in conflict-affected or insecure areas, 2012**

- Support the key humanitarian "actors" (e.g. Red Cross and Red Crescent) who can provide invaluable assistance in negotiating access and vetting potential local collaborators. Recruit individuals with expertise in conflict, political mapping, and associated skills
- Build the capacity to support teams and workers in conflict-affected areas
- Identify and engage non-traditional partners and decision-makers
- Refine tactics (e.g. "Days of Tranquillity", "access negotiators" and use of oral polio vaccines in "short interval additional dose" campaigns) and technologies (e.g. hand-held jet injectors for administering vaccines) to facilitate immunization
- Develop local administrative processes to contract services and move resources

Disparities in country support

Fast-changing epidemiology and cash flows often require *nimbleness* in the reallocation of funds. Responding to resource constraints, the GPEI has developed new mechanisms to evaluate and prioritize activities for maximum effect. Financial tracking allows identification of weaknesses and disparities in country support, such as the inadequate funding given to some countries where transmission had been re-established, such as Chad in 2009 and South Sudan in 2008.[4] A nimble reaction to outbreaks can limit their spread and decrease the risk of re-establishment of poliovirus circulation. GPEI is developing a two-pronged approach to enhance the speed, quality and impact of outbreak response activities for both wild poliovirus and circulating vaccine-derived polioviruses. There will be closer international monitoring of response activities to manage risks associated with new polio outbreaks, and new, international, outbreak response guidelines informed by the results of pilot studies, operational research and clinical trials.[4]

Security challenges

Programme adaptability

The solving of operational problems requires both *adaptability* and learning from experience. Myths need to be overcome, the standard of outbreak response needs to be improved, and children in conflict-affected or insecure areas need to be vaccinated. Insecurity and conflict pose difficult challenges to operational feasibility. Although adults in conflict-affected areas are often very keen to improve their children's future and can be readily engaged in the delivery of basic health services, they are often also very difficult to reach. The complexity of conflict may necessitate the development of site-specific tactics that allow health personnel to reach target groups safely. The current challenges in southern Afghanistan and the federally administered tribal areas of Pakistan are considerably different from those previously addressed in countries such as the Democratic Republic of the Congo and Somalia.[24] In practice, success in eradicating polio from one conflict-affected or insecure area does not "prove" the overall operational feasibility of the global task, but it does provide invaluable experience to take to the next such area (Box 1). Given appropriate attention and investments, adaptability can overcome the barriers to polio eradication posed by conflict. In the context of the Emergency Action Plan for 2012–2013, the GPEI's Independent Monitoring Board has recognized the effectiveness of, for example, Afghanistan's polio eradication programme's adaptability and ingenuity in gaining access to children eligible for vaccination in the face of considerable security challenges.

Conclusion

Attention to the key human qualities needed for success is as important for polio eradication as it was for smallpox eradication.[25] The global eradication of polio depends on increasing herd immunity, through mass vaccination, to counterbalance the factors that favour persistent poliovirus transmission and the vulnerability of a population to poliovirus (i.e. poverty, overcrowding, conflict, political instability, low levels of education and sanitation and high fertility). To tilt the balance and stop poliovirus transmission, various human qualities need to be enhanced, highlighted, invigorated and intensified. These human qualities, which can be remembered as the acronym

ERADICATION, are energy, realism, articulacy, determination, imagination, collaboration, adaptability, tactical awareness, innovation, openness and nimbleness. Advocates, whether at the global, national or local level, can use ERADICATION as a rallying call in their identification and promotion of the qualities needed to achieve global polio eradication. The only alternative to polio eradication is the indefinite application of measures to limit the spread of, and harm caused by, polio, with indefinite costs incurred in both human and economic terms. A lack of determination will consign the goal of global polio eradication to the fate of Tantalus.[26] ■

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ملخص

الصفات البشرية اللازمة لاستكمال استئصال شلل الأطفال على الصعيد العالمي

على الرغم من أن الانخفاض بنسبة 99 ٪ الذي لوحظ في معدل الإصابة بشلل الأطفال على الصعيد العالمي في الفترة من عام 1988 إلى 2000 مثل تقدماً ملحوظاً تجاه استئصال شلل الأطفال، إلا أن مكافحة نسبة 1 ٪ الأخيرة من شلل الأطفال أثبتت صعوبة بالغة. وتستمر جيوب سراية هذا المرض المتوطن في الوقت الراهن على الحدود بين أفغانستان وباكستان وفي شمال نيجيريا. وقد سمحت هذه الجيوب بإصابة بلدان كانت خالية من شلل الأطفال في السابق بالعدوى من جديد. وحددت الخطط الاستراتيجية العالمية لاستئصال شلل الأطفال الأنشطة والموارد والتمويل اللازم للتغلب على التحديات الإدارية والتقنية والأمنية التي تواجه من يُناط بهم مهمة مقاطعة سراية شلل الأطفال. ومع ذلك، فإن استئصال شلل الأطفال يعتمد كذلك على صفات بشرية أقل مادية، ولكنها على نفس القدر من الأهمية، وهي الطاقة والواقعية والفصاحة والتصميم والتخيل والتعاون والقابلية للتكيف والوعي التكتيكي والابتكار والصراحة والفطنة (معاني الكلمات التي تشكل أحرفها الأولى كلمة "ERADICATION" بالإنجليزية). وعن طريق إيلاء الاهتمام لهذه الصفات البشرية، من الأرجح أن يقوم أصحاب المصلحة المعنيين بإنجاز استئصال شلل الأطفال على الصعيد العالمي.

摘要

实现脊髓灰质炎全球根除所需的人文素质

尽管在1988 年和2000 年间，全球脊髓灰质炎发病率减少99%，表明根除脊髓灰质炎工作取得了显著进步，但是经证明，消灭最后1%的脊髓灰质炎非常困难。目前，在阿富汗和巴基斯坦的边界和尼日利亚北部都存在小片的地方性传播。这些小块地区已经引起之前没有无脊髓灰质炎国家的二次感染。脊髓灰质炎全球根除战略计划设定必要的活动、资源和资金筹措，以帮助肩负切断脊髓灰质炎病毒传播重任的人们克服所面临的管理、技术和安全方面的挑战。然而，根除脊髓灰质炎还依赖于虽然无形但同样重要的人文素质：精力、现实主义、表达能力、决心、想象力、协作、适应性、战术意识、创新、开放和灵活度（这些词语的英语首字母缩写为"ERADICATION"）。通过关注这些人文素质，利益相关方可能会更容易实现脊髓灰质炎的全球根除目标。

Résumé

Qualités humaines nécessaires pour achever l'éradication mondiale de la poliomyélite

Même si la diminution de 99% de l'incidence mondiale de poliomyélite entre 1988 et 2000 a représenté un remarquable progrès vers l'éradication de la maladie, s'attaquer au dernier 1% de la polio s'est avéré terriblement difficile. Des poches de transmission endémique persistent actuellement à la frontière entre l'Afghanistan et le Pakistan et au nord du Nigeria. Ces poches ont permis la réinfection des pays qui ne présentaient auparavant plus aucun cas de poliomyélite. Les plans stratégiques mondiaux pour l'éradication de la poliomyélite ont établi les activités, les ressources et le financement nécessaires pour surmonter les défis techniques, de gestion et de sécurité que doivent relever les personnes chargées d'eradiquer la transmission du virus de la polio. Cependant, l'éradication de la maladie dépend aussi de qualités humaines moins tangibles, mais tout aussi importantes, qui sont l'énergie, le réalisme, la faculté d'expression, la détermination, l'imagination, la collaboration, l'adaptabilité, le sens tactique, l'innovation, la sincérité et la vivacité (dont les lettres initiales en anglais donnent l'acronyme «ERADICATION»). En prêtant attention à ces qualités humaines, les parties prenantes pourront probablement réussir à éradiquer la poliomyélite à l'échelle mondiale.

Резюме

Человеческие качества, необходимые для достижения цели избавления от полиомиелита в глобальном масштабе

Несмотря на 99%-ное снижение уровня глобальной заболеваемости полиомиелитом в течение 1988-2000 гг., что является значительным прогрессом в деле ликвидации полиомиелита, борьба с последним 1% заболеваемости полиомиелитом оказалась мучительно трудной. Источники эндемической передачи в настоящее время сохраняются как на границе между Афганистаном и Пакистаном, так и на севере Нигерии. Именно они привели к повторному инфицированию стран, в которых ранее отсутствовал полиомиелит. Глобальные стратегические планы по ликвидации полиомиелита содержат

описание мероприятий, ресурсов и финансирования, необходимых для преодоления управленческих, технических трудностей и проблем безопасности, с которыми сталкиваются специалисты, выполняющие задачу по предотвращению передачи полиовируса. Тем не менее, ликвидация полиомиелита зависит также и от менее осязаемых, но столь же важных человеческих качеств: активности, реализма, убедительности, решительности, воображения, сотрудничества, способности к адаптации, понимания тактики, восприятия инноваций, открытости и быстроты действий (начальные буквы этих слов на английском языке образуют слово «ERADICATION» (ЛИКВИДАЦИЯ). Уделяя внимание этим человеческим качествам, заинтересованные стороны смогут с большей вероятностью достичь цели глобальной ликвидации полиомиелита.

Resumen

Las cualidades humanas necesarias para lograr la erradicación global de la poliomielitis

Aunque la disminución del 99% en la incidencia de la poliomielitis a nivel global observada entre 1988 y 2000 representó un progreso notable hacia la erradicación de dicha enfermedad, hacer frente al último 1% ha resultado terriblemente difícil. En la actualidad persisten enclaves de transmisión endémica en la frontera entre Afganistán y Pakistán y en el norte de Nigeria. Dichos enclaves han permitido que países que ya se habían librado de la enfermedad se hayan vuelto a infectar. Los planes estratégicos globales para la erradicación de la poliomielitis establecen las actividades, los recursos y la financiación necesarios para vencer los retos administrativos, técnicos y de seguridad a los que hacen frente las personas cuya tarea es interrumpir la transmisión del poliovirus. No obstante, la erradicación de la poliomielitis también depende de cualidades humanas, menos palpables pero igual de importantes, como la energía, el realismo, la capacidad de expresión, la determinación y la imaginación, la colaboración, la flexibilidad, los conocimientos tácticos, la innovación, la franqueza y la agilidad (en inglés, las iniciales de estas palabras dan lugar a las siglas ERADICATION, erradicación en español). Si se presta atención a dichas cualidades humanas, las partes interesadas implicadas podrían tener más posibilidades de lograr la erradicación global de la poliomielitis.

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