The uneasy politics of epidemic aid: the CDC's mission to Cold War East Pakistan, 1958

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Epidemic outbreaks, political struggle, civil society response

Historians warn against narratives in which actors are spared the dilemmas of chance and choice. No doubt prolepsis, anachronism and teleology should be avoided, but I find it difficult to tell a story about East Pakistani politics and disease control in 1958 without underlining two facts that emerged later – that East Pakistanis would win a bitter struggle for independence from West Pakistan in 1971, and that smallpox would be eradicated from Asia in 1975, when the very last case was traced to a child in a remote village of the new nation of Bangladesh.

While my story does not directly engage the Bangladesh civil war or the final push for smallpox eradication, it narrates some of the pre-history of both. Put differently, the unity of Pakistan and the survival of the *Variola* (smallpox) virus were both threatened by developments in 1958. Further, an exotic institutional actor, the US Communicable Disease Center (CDC, later renamed the Centers for Disease Control and Prevention), played a leading role in these developments.¹ Little note was taken of CDC's involvement at the time, because not only was its future global leadership unsuspected, but the diplomatic significance of foreign assistance in humanitarian crises was still being established.² Most observers at the time assumed that the long-established Red Cross and Red Crescent societies and the newly founded World Health Organization (WHO) would be the key international players. However, an opening for CDC came when smallpox and cholera broke out everywhere in East Pakistan in the spring of 1958.³

Cholera and smallpox were endemic to both East and West Bengal.⁴ The diseases were historically embedded in regional culture, and Hindu and Muslim devotees were known to worship disease deities in village shrines and temples.⁵ Indeed, the bacteria that cause cholera (*Vibrio cholerae*) are thought to have evolved in the waters at the face of the Ganges-Meghna-Brahmaputra delta, and local variants of cholera have emerged seven times since 1817 to encompass the world.⁶ Smallpox was just as deeply entrenched as cholera; it had a multi-year epidemic cycle, the severity in any given year depending on the number of susceptible infants and children. By mid-April of 1958, according to official sources, at least 700 Bengalis were dying of cholera weekly and another 1,500 of smallpox.⁷ While these numbers are large, they had been larger in previous years. However, public anxiety was greater than usual in spring of 1958, because political and technical troubles had crippled the East Pakistan (EP) Department of Public Health. The department was small and poorly funded; it had twenty-five district health officers to serve 43 million people.⁸ Vaccination was performed by badly paid vaccinators supervised by a handful of sanitary inspectors.⁹ An Institute of Public Health in Dacca produced 48 million doses of smallpox lymph each month, enough for every East Pakistani. But in April 1958, at the very moment when smallpox mortality was rising, production fell to 14 million doses, because a province-wide outbreak of rinderpest had caused a shortage of calves needed to make vaccine.¹⁰ The supply of cholera vaccine, considerably less immunogenic than smallpox vaccine, was less of an issue, but it too was limited.¹¹

In addition to epidemics, political crises continuously agitated EP public life in the spring of 1958. There were three chief points of contention. First, provincial autonomy: many Bengalis asked, why should the elected government in Dacca be unable to appoint its own officials and commit provincial resources without waiting on orders from distant ministers and bureaucrats in the West? Second, official language: why should the Bangla language, spoken by 43 million East Pakistanis, not receive the same official recognition in public life and education as Urdu, a language spoken by millions fewer West Pakistanis? Third, ideology: why should Pakistan be bound to military alliances with USA and the UK instead of forging closer ties with more obvious allies in communist China and the Soviet Union?¹² Party and personal power struggles along these lines led to affrays in the legislative chamber, and

there was frequent churning of ministerial leaders in Dacca.¹³ As a result public services, including education and public health, were often paralysed.

In January 1958 newspapers in Dacca began to report outbreaks of smallpox and cholera in peripheral districts, giving a few lines to each on inside pages (Figure 1.1). Because smallpox and cholera were familiar seasonal diseases, these initial reports produced little public response.

NEWS FROM DISTRICTS		
<p>DACCA</p> <p>10 Pox Deaths MUNSHIGANJ, Feb. 24:—Cases of smallpox are reported from the villages of Hashail Union of the Tangibari Police Station. So far 10 persons died of small-pox. Dearth of pure drinking water is reported to be responsible for the spread of smallpox.—UPP.</p> <p>School Managing Body MUNSHIGANJ, Feb. 24:—The District Magistrate, Dacca has dissolved the existing Managing Committee of the Sholghar A. K. S. High English School of Sreenagar Police Station. An ad-hoc Committee has been appointed with Mr. U. C. Sarkar, Circle Office, Lohaganj as Secretary, it is learnt. UPP.</p> <p>Govt. Grant MUNSHIGANJ, Feb. 24:—The Government of East Pakistan has allotted a sum of Rs. 13,000 for the re-excavation of Taltala-Lehajang Canal, it was learnt here.—UPP.</p> <p>Bengali Drama</p>	<p>BARISAL</p> <p>Ex-Servicemen Assocn. FROM OUR CORRESPONDENT BARISAL, Feb. 22:—Local Ex-Servicemen at a meeting, held recently in the Zilla School ground have formed an association under the name of Barisal Exservicemen Association. The association will be non-political and non-communal in character and aims at working for the social and economical upliftment of the ex-servicemen of the district.</p> <p>An eleven-member Executive Committee was formed with Capt. M. Ahmed, M.B. as the president and Messrs S. M. Dutta Chowdhury and B. B. Chowdhury as the Joint Secretaries.</p> <p>Office-Bearers Of Bar Asscn. FROM OUR CORRESPONDENT BARISAL, Feb. 22:—The office-bearers of the local Bar Association for the year 1958 have been elected at an annual general meeting held here recently, Mr. Abani Nath Kosh sitting President and Mr Mohd Yunus have been elected as President and Secretary respectively of</p>	<p>RAJSHAHI</p> <p>Scarcity Of Cigarettes FROM OUR CORRESPONDENT RAJSHAHI, Feb. 23:—Acute Scarcity of cigarettes is prevailing in the local town since long and Scissors is selling @ 10 annas and Capstan @ Ropee one and annas four per packet.</p> <p>It may be mentioned here that army officials have arrested one person for selling cigarettes at higher rates. They have also raided the shop of local cigarette agents but found nothing, it is further learnt.</p> <p>Outbreak Of Pox FROM A CORRESPONDENT NATORE, Feb. 22:—Outbreak of smallpox and other epidemic diseases have been reported from whole Natore Sub-division due to the want of pure drinking water.</p> <p>The Government of East Pakistan have been urged to pay immediate attention in this regard.</p>

Figure 1.1 Fragmentary news reports of smallpox outbreaks from EP districts of smallpox, *Pakistan Observer*, 23 February 1958. News reports were a source of outbreak intelligence that travelled faster than the EP Health Department's passive surveillance.

As the spring advanced, however, the capital itself was threatened, and alarmed letters to the editor and editorials appeared on the front and inside pages.¹⁴ By April cholera and smallpox concerned readers in West Pakistan as well.¹⁵ On 9 April the Chief Minister in Dacca, Aaur Rahman Khan (Awami League), acceded to pressure and called a public meeting to review the epidemic situation.¹⁶ On this occasion the provincial Health Minister, D. N. Datta, announced mortality estimates and the extent of his department's vaccine problems.¹⁷ After hours of discussion, the Chief Minister proclaimed the formation of a Citizens Provincial Epidemic Control Committee (CPECC) to manage the epidemics through civil society means. The Citizens Committee included physicians, medical college professors, a few provincial assembly members, a few Health Department officials and representatives from social, political, student and welfare organisations.¹⁸ 'In effect, this replaced the Health Department by a voluntary organisation', noted a foreign observer, T. A. Cockburn.¹⁹ A smaller 'Operational Committee' was responsible for day-to-day activities and met frequently for several months.

While the CPECC urged an increase in the Health Department budget, its chief proposal was to recruit and train volunteers who would first vaccinate in Dacca and then fan out across the province. The requirements for success were, first, to mobilise a huge number of enthusiastic students and, second, to secure copious vaccine supplies from abroad. The same foreign observer inferred that the Chief Minister's motive was 'to shift responsibility for the epidemic disaster from his own Government to the Committee' – it was to be, in effect, a 'vigilante' organisation.²⁰ This is an exaggeration – the CPECC was never wholly out of control – but it quickly developed an agenda that drove out dissenters. For example, it endorsed casual vaccination methods that riled the few committee members who were public health professionals. Dacca newspapers, delighted by the CPECC's energy and novelty, mostly supported its efforts; they also urged their readers, 'Get yourself inoculated. Cholera and smallpox are spreading in the city.'²¹

Arrival of international aid, March–April 1958

The Government of Pakistan (GOP), facing criticism for unacceptably high mortality in EP, and already anxious about the success of the

Communists in the 1954 provincial legislative elections, made an effort to relieve the epidemics.²² In early April it turned to the International Federation of the Red Cross and Red Crescent Societies and the WHO for help. The WHO took the lead and broadcast a global call for vaccines and other supplies. Although there was then no mechanism to stockpile and dispatch relief aid, twenty-five countries sent Pakistan more than 22 million doses of smallpox vaccine between April and June 1958. The first country to respond was the USA, specifically a specialised agency within the State Department, the International Cooperation Administration (ICA, antecedent to the Agency for International Development), which had staff in the Karachi embassy and Dacca consulate.

Some US vaccine arrived in Dacca within two weeks of the GOP/WHO request, and by the end of June the USA had supplied more than half of the total imports.²³ Other major donors included Republican China, France, Canada, the Soviet Union and the WHO itself (Table 1.1). While most smallpox vaccine arrived as liquid lymph under

Table 1.1 Major donors of smallpox vaccine to East Pakistan, spring 1958^a

Doses of lymph (wet) or freeze-dried vaccine (dry)
USA and US Red Cross Society 11.81 million, wet
Chinese Red Cross Society (Taiwan) 2.88 million, wet and dry
Soviet Union 2.25 (3.0) million, dry ^b
World Health Organization 1.72 million, dry
Canadian Red Cross Society 1.4 million, wet
French Catholic Relief Society 1.1 million, dry
India 0.43 million, wet
Turkish Red Crescent Society 0.10 million, wet
Germany and German Red Cross Society 0.69 million, wet and dry

^a Cockburn, ‘Epidemic Crisis in EP’, p. 3, CDC-RG 442. There was a great profusion of vaccines arriving from different countries in variously sized vials, bottles, ampoules, and so on, with different labels and instructions.

^b The larger figure for Soviet dry vaccine was noted by the American consul in Dacca. Gene Caprio to Department of State, Foreign Service Despatch no. 362, Dacca, 17 June 1958, CDC-RG 442.

refrigeration, the vaccine furnished by the Soviet Union (USSR) came freeze-dried – a promising new mode unaffected by ambient temperatures.²⁴ Smaller amounts of cholera vaccine were also sent, including one million doses from the People's Republic of China.²⁵

The swift and generous response from the USA to the call for vaccine was no mystery. South Asia was a Cold War theatre in 1958, and Pakistan belonged to two US military alliances – CENTO (the Baghdad Pact) and SEATO.²⁶ US security doctrine in this period held that grinding poverty, unchecked epidemics and other such features predisposed underdeveloped countries to turn toward Communism; further, the USSR was suspected of playing on 'local aspirations, resentments and fears' to advance an anti-American agenda.²⁷

Since the mid-1950s US diplomats had been monitoring the rise of the leftist National Awami Party (NAP) in East Pakistan, which they believed to be intent on exploiting epidemics and food shortages to disparage Pakistan's pro-western policies. Hence in early April of 1958, ICA staff assembled an emergency aid package that, in addition to scouring the earth for vaccine, also brought in a US Naval Medical Research Unit (NAMRU 2) from Taiwan to Dacca to work on the cholera threat.²⁸ Furthermore, the ICA set in motion the appointment of a Chief Public Health Adviser to the Government of East Pakistan, Dr Aidan T. Cockburn, MBBS, DPH.²⁹ Cockburn, a 46-year-old British epidemiologist who had previously served as WHO adviser to the government of Ceylon, arrived with his family in Dacca on 20 April. Cockburn was being paid by ICA and was seconded to the Pakistan government. He quickly gained the trust of the Pakistan central Minister of Health and the EP provincial Minister of Health; the latter named him director of the Institute of Public Health in Dacca.³⁰ US Information Service (USIS) units in Dacca and Karachi arranged for these developments to be covered favourably in local newspapers and their own Bangla-language newsletter, *Markin Parikrama* (American Survey).

CDC epidemiologists and active surveillance

News of the US aid package for Pakistan caught the attention of Dr Alexander D. Langmuir, MD, MPH, chief epidemiologist of the US Communicable Disease Center in Atlanta.³¹ Langmuir, a 48-year-old public health physician, was a graduate of Harvard College and Cornell

Medical School and had been a professor of epidemiology at Johns Hopkins University School of Hygiene and Public Health before joining CDC in Atlanta in 1949. He was the US Government's top investigative or field epidemiologist.³² Since 1951 he had built up a field epidemiology training programme at CDC, rather colourfully named the Epidemic Intelligence Service (EIS), which enjoyed a reputation for coping with difficult outbreaks and other health crises in the US.³³ By 1958 Langmuir was chafing to test his EIS officers – most of whom were conscripted physicians trained in field epidemiology by being directly planted in state and local health departments – in deeper waters abroad. He was openly scouting opportunities in third-world settings where he knew 'active surveillance' methods would prove valuable (Figure 1.2).³⁴

Tipped off by Cockburn about developments in Pakistan, Langmuir cabled the US Embassy in Karachi on 22 April, offering a team of

Figure 1.2 Dr Alexander D. Langmuir, Chief Epidemiologist, Communicable Disease Center, Atlanta GA, c.1955. Source: National Library of Medicine.

epidemiologists for service in EP.³⁵ He and Cockburn were of the same generation; both had been army epidemiologists during the Second World War, and Cockburn had been a CDC Chief of Encephalitis Branch from 1948 to 1954 before moving to the WHO. The two of them had co-authored a paper a year earlier.³⁶ ICA administrators in Karachi, reasoning that two senior epidemiologists might be better than one, agreed to fund the CDC team's expenses. The ensuing effort in EP was CDC's first group aid mission abroad.³⁷

Langmuir's reputation as a giant of epidemiology was due to his successful practice of an investigative method he called 'active surveillance', by which he meant 'continued watchfulness over the distribution and trends of [disease] incidence through the systematic collection, consolidation and evaluation of morbidity and mortality reports and other relevant data.'³⁸ 'Continued watchfulness' required the collection and interpretation of data that revealed the velocity and route of a pathogen's movement through a defined population. Active surveillance was to be contrasted with 'passive surveillance' such as was practised in EP, which involved the slow peregrination of an uncertain diagnosis from an illiterate village watchman to the Health Ministry via intermediaries and an unreliable postal system.³⁹ Active surveillance, in contrast, took place in real-time as an outbreak occurred. If a disease could be quickly profiled – whether in a school, temple or mosque, barrack, factory, city or state – then a rapid, precise response would be launched.

Of course, it helped to know the infective agent's identity – was it influenza, salmonella or polio? – and its means of transmission – mayonnaise or mosquitos? But when a pathogen was unknown, CDC microbiologists stood ready in Atlanta to identify it. The investigative goal was not deep thoroughness but elegant sufficiency: collect just enough data to see a pattern, then work out where and how to halt the outbreak. EIS officers received their training on the job and learned how to make their own inquiries, going from hospital to hospital, clinic to clinic, and even patient to patient. They stood ready to travel when stressed-out city or state officials summoned, and glossy magazine journalists in the USA took to calling them 'disease detectives'.⁴⁰

Further, Langmuir held that 'intrinsic in the concept [of surveillance] is the regular dissemination of the basic data to all who have contributed and to all others who need to know'.⁴¹ Not only must field epidemiologist share their data, they must also renounce credit for any

success in favour of the agency that had summoned them; it was politic to give away the glory. Following these principles, Langmuir and CDC had made allies in state and local health departments; over several decades, active surveillance became an essential tool of US and then international public health practice.⁴²

Cockburn, who arrived in Dacca three weeks before the EIS contingent, met with strong objection on being appointed to the CPECC by the Pakistan Minister of Health. He was the only foreigner on an all-Bengali Committee pursuing a left-populist agenda. His role – ‘Public Health Adviser to East Pakistan’ – had been invented by ICA, and it seemed plausible to many that he was a US agent. In any case, he knew precious little about the Bengalis, their culture and their homeland. As a consequence, he noted later, the CPECC Operational Committee was ‘extremely vicious to me’, and he faced several weeks of ‘bitter fighting and arguing’.⁴³ Once accepted on to the Committee, he found it to be often dysfunctional. Here is his account of a CPECC meeting in May:

The Committee set to work with the avowed intention of destroying the Public Health Department. The Committee originally had many civil servants on it, but the unofficial members insulted these civil servants so much that they stopped attending the meetings. By the date of my arrival on May 20 [*sic*; his actual arrival was 20 April], the effective committee now consisted of about eight members who had complete control of all matters dealing with smallpox and cholera. This committee consisted of a veteran newspaper reporter, a private practitioner, a medical student, and the remainder were very junior doctors in government employ. Not only was the whole [Health] Department afraid of this group, but the Minister himself dared not oppose it. At one of the meetings that I attended they demanded more money for their work, and when the Minister stated he did not have any more, they rose to their feet shouting at the Minister and insulting him. One young doctor harangued the Minister for nearly ten minutes, his voice rising higher and higher to a thin scream, until finally it cracked and he burst into tears. The Secretary and the Director of Public Health both sat silent and the Minister kept his head bowed in an abject posture, even though this particular doctor was only a junior member of the health department. The Committee got the money they demanded.⁴⁴

Bowing to the Committee’s will, Cockburn agreed to support a mass campaign based on volunteers rather than on trained public health

staff. He then threw himself into the recruitment of university students. This shift, dictated initially by political necessity and later defended as an effective strategy, preceded the arrival of Langmuir and his EIS team and marked a professional divide that would never be overcome (Figure 1.3).

After briefings in Karachi, Langmuir and his eight-man team flew to Dacca on 12 May and were met by consular, ICA and USIS officers.⁴⁵

Figure 1.3 Dr T. Aidan Cockburn, East Pakistan Provincial Health Adviser, vaccinating an infant in Barisal district. Source: *Markin Parikrama* ('American Survey'), May 1958.

The week of their arrival coincided with peak smallpox mortality. Accompanying Langmuir as his deputy were Glenn Usher, an unflappable CDC physician-epidemiologist, and seven EIS physician-trainees.⁴⁶ Their plane was loaded with vaccine on ice, and USIS staff had planned a publicity blitz around the arrival of experts and supplies.

While the Dacca papers took note of the Americans' arrival, their enthusiasm was restrained; some journalists were openly anti-American, others were at best lukewarm; the US team had arrived under the auspices of the Karachi government at a time of elevated anti-central government sentiment. When a Russian team of bacteriologists landed a few days later, also bearing large quantities of vaccine, the Dacca press was much more welcoming. Langmuir, following Cockburn's advice, established cordial relations with the Soviet team, which was given workspace next to the Americans in the Institute of Public Health. It soon became clear that the Russians were mainly interested in cholera research.⁴⁷ While the Russian scientists researched, Soviet diplomats tried to funnel the two million doses of freeze-dried vaccine to the pro-communist National Awami Party for the party's own team of volunteer vaccinators. Cockburn intervened to ensure that all vaccine was stored together in the Institute of Public Health for allocation through the CPECC.⁴⁸

Langmuir quickly discovered that the CPECC would not tolerate the US direction of the campaign and that the CDC's role would be to support, not to command.⁴⁹ On 18 May – just six days after the US team arrived – the Chief Minister, Atur Rahman Khan, called a press conference to announce that, given abundant epidemiological expertise and copious supplies of foreign vaccine, the CPECC had decided to ramp up what had been a smallpox control campaign to an *eradication* campaign. The CPECC, the Chief Minister promised, would raise a volunteer force of 20,000 students that would stamp out both smallpox and cholera in East Bengal in four months.⁵⁰ A pamphlet stating these aims was distributed to the press.⁵¹ Cockburn approved of the pamphlet, and it is likely that he was its author.⁵² The projected eradication campaign rested on three premises: first, that vaccination was a simple procedure and could be easily taught to volunteers; second, that vaccine was abundant and possessed immunological potency; and third, that volunteers would come forward in large numbers. Smallpox eradication would thus become a people's movement, because, in Cockburn's sympathetic

view, 'the citizens of the country had started a vast spontaneous, unplanned, uncoordinated effort to vaccinate themselves.'⁵³ Cockburn fully endorsed the premise that motivated volunteers could accomplish great tasks in public health.⁵⁴

While the three premises proved to be more or less correct, success did not, in fact, come as easily and swiftly as had been promised. This did not escape the Chief Minister who, one month after the campaign began, reconsidered the unbridled authority he had made over to the CPECC. At a meeting on 25 May he announced to members that henceforth Cockburn would be in control of the campaign. Thereafter Cockburn directed, to the chagrin of many. However, the Chief Minister also insisted that a Bengali doctor would serve as the committee's figurehead chair. Now in charge, Cockburn made no dramatic changes in CPECC's volunteer methods, rather he laboured to make them work smoothly and to ensure that public health personnel supported rather than opposed the volunteer campaign.⁵⁵

Langmuir's men were enraged by Cockburn's abandonment of standard public health methods, but they kept quiet. They had no doubt that the Chief Minister had announced the eradication campaign in mid-May because he had learned from Cockburn that the WHO would be debating global eradication at the World Health Assembly (WHA) in June.⁵⁶ By proclaiming an EP eradication plan, his government was stealing a march on domestic opponents and the rest of the world. Langmuir, who thought eradication unlikely under the best of circumstances, was flushed out by Bengali reporters and said diplomatically: '[if] the basic organisation [were] there, there was no reason why the East Pakistan government should not be able to eradicate smallpox.'⁵⁷ But of course he knew that 'the basic organisation' – meaning a health department of trained professionals backstopped by a well-equipped infrastructure – was not there at all.

The popular vaccination campaign, April–July 1958

Within a few weeks of the CPECC's creation in April, several hundred volunteers were recruited, beginning with students from the Medical College on the campus of Dacca University.⁵⁸ Most university students were patriotic supporters of regional autonomy, having waged a

protracted, sometimes violent but successful campaign to secure full recognition for the Bengali language in Pakistan's public life a few years before.⁵⁹ The call for a people's vaccination campaign was another opportunity to aid fellow Bengalis and serve their province. Cockburn is still remembered for an address he made to 1,000 university students in May 1958; he spoke animatedly about vaccination, but his medical terminology required translation. Thereupon many students volunteered.⁶⁰

Within a few weeks students had vaccinated nearly 300,000 inhabitants of Dacca.⁶¹ They then set off for district towns. The CPECC provided them with four rupees a day for food, and they had permission to travel free on the state railways.⁶² By late May, citizens' sub-committees had been established in most district and sub-divisional towns, where they organised evening health spectacles to galvanise the public and attract volunteers. With the assistance of magistrates, army officers and other notables, they staged parades, organised lectures, held concerts and screened short films about health and sanitation. New volunteers were trained, given lists of targeted wards or villages, and sent off with boxed vials of vaccine. In some places schoolteachers taught their students to vaccinate, and it was noticed that schoolgirls could freely enter homes to vaccinate women in purdah. In other places local officials called on *Ansars*, a part-time force of police auxiliaries, usually farmers, urging them to volunteer. The volunteers' efforts, where backstopped by district officers and available public health staff, resulted in widespread acceptance of vaccination, which was understood to be a project by Bengalis for Bengalis. There were no reports of resistance or opposition. Yet in districts where official support was lacking or where there was inter-party competition, the coverage was distinctly spotty.⁶³

Significantly, the vaccination methods taught to volunteers were streamlined until only the bare essentials of standard Health Department inoculation protocols were retained. First, the vaccine cold chain was ignored, apparently without ill effects.⁶⁴ Second, alcohol swabbing before vaccinating was given up, as was bandaging vaccinees' slight wounds. Third, in lieu of medically purposed needles or rotary vaccination lancets, ordinary needles were widely used (the ICA sourced 11 million sewing-machine needles, which were distributed like prizes). Fourth, there was no common method of inoculation: 'all vaccinators

Figure 1.4 Professional methods of vaccination. WHO, *Handbook for Smallpox Eradication Programmes in Endemic Areas* WHO/SE/67.5 (Geneva 1967), pp. III–10.

soon went their own ways, some making punctures, others making long scratches, while some did elaborate cross hatchings'. Fifth, record-keeping was minimised, and volunteers kept track only of the number of doses administered without taking down names or other information.⁶⁵ These modifications, made in the interest of speed and simplicity, were suited to an amateur force whose energy and enthusiasm were key ingredients in the campaign (Figure 1.4).

Admittedly, enthusiasm could flag, and unopened boxes of vaccine were sometimes found abandoned.⁶⁶ An EIS observer who shadowed volunteers in the Brahmanbaria subdivision of Tippera district noted that they were primarily

local students of upper school and lower college levels ... The students have no field or family commitments to worry about; yet they work in their own union so they can return to their home or a friend's home each night after work. Their morale and sense of public service is far higher than the *ansars*' [i.e. home-guards]. They have been granted an extended

vacation so that they are free to do their work ... They work in small teams, each with a supervising teacher, village by village. They are far more literate and reliable as reporters of their activities than *ansars* ... There are problems, however. Morale is declining as the volunteers enter their third week ... The ASDO [Assistant Sub-divisional Officer] admits that the students are missing a good number of persons due to unwillingness to be vaccinated or absence in the field.⁶⁷

The observer estimated that 30,000 Bengalis were vaccinated daily by these unorthodox means at the height of the campaign.⁶⁸ The cholera and smallpox epidemics both subsided spontaneously, as was normal, with the monsoon's arrival in late June.

CDC field epidemiologists go into the districts

In EP the most basic data for understanding disease trends, such as hospital admissions, lab-confirmed diagnoses, and morbidity and mortality statistics, were often non-existent. It was estimated that only one in ten cases of smallpox was officially reported.⁶⁹ Thus a principal mechanism for finding outbreaks was via the several daily newspapers to which stringers in outlying areas sent brief reports by telegraph. These reports came to notice more swiftly than the Health Department's chain of reporting, but were not always accurate. Langmuir and his team were eager to analyse health data, but they lacked the ability to generate the numbers themselves – they could neither read, nor speak nor count in Bengali and were ignorant of the cultural and political terrain. Under these circumstances, what could they do that would be of real significance? After discussions with Cockburn, the health ministers and the CPECC committee, the CDC team agreed to become 'the "eyes and ears" of the smallpox control programme' by visiting all seventeen districts and preparing reports that would 'evaluate the current control campaigns in the districts and identify areas of success and failure ... [and other] epidemiological factors of importance to the smallpox control programme'.⁷⁰ In short, Langmuir's team took on an evaluation task; they had no authority over vaccination policy nor over volunteer vaccinators.⁷¹ Langmuir promised the reports would be completed by late June, when monsoon floods always put an end to most rural travel. He and Usher would stay behind in Dacca to attend to logistics.⁷²

From 19 May until 15 June the seven EIS officers fanned out into the districts, each with a volunteer Bengali physician-guide. They traced vaccine supply chains, observed volunteers in training and action, and counted the frequency of scars from previous vaccinations. They tested the Soviet freeze-dried vaccine and determined it was just as effective as liquid lymph. They found that prior vaccination did not always confer long-term immunity. They discovered great unevenness in coverage and determined that the campaign would not reach its goal of 80 per cent coverage. They estimated that hundreds of thousands of infants and children were being missed.⁷³ In Comilla district, which was considered the most successful in the province, EIS officer Fred Dunn found that 'a sizable and particularly vulnerable segment of the population [children] will still remain unprotected'.⁷⁴

In Brahmanberia sub-division of Comilla, '12 percent of children under four years of age and 27 percent of infants under 1 year of age remained unvaccinated after the campaign had completed in those areas'.⁷⁵ Coverage was even less complete in the other districts. At the end of their tours, the EIS officers prepared reports containing mostly negative accounts of volunteer-based smallpox control. The gist of these, but not the reports themselves, were shared with EP health officials and district magistrates in late June meetings.

During this four-week period – late May until late June – relations between Cockburn and CDC team members came to the brink of collapse. They despised him for failing to stand up to Bengali politicians. They repeated a rumour that he enjoyed ministerial favour, and especially his appointment as Director of the Institute of Public Health, because he had promised millions of dollars from the Americans to furnish and equip the near-empty building.⁷⁶ They loathed his encouragement of volunteerism and referred to the eradication programme as 'Aidan's circus' and 'Operation Cockburn Fantastique'. Their criticisms went beyond his 'wandering minstrel' show to the man himself, whom they mocked as a bumbler, a 'madman' who 'hopped up and down' when agitated, and who impulsively 'ran out of the room'. As physicians, they decided he needed tranquillising.⁷⁷ In these and other ways they undercut his authority as Chief Public Health Adviser and threw cold water on the volunteer campaign. The most likely cause of this venomous criticism was that they felt vulnerable for being so closely associated

with an unprofessional and wasteful campaign they expected to fail.⁷⁸ Usher wrote to Langmuir,

I've been uneasy all along about the position of our team in relation to this situation, and I'm still uneasy. We are all thoroughly convinced that Aidan's whoop-de-doo campaign is going to fall far short of vaccinating 80% or 90% of the population in four months. But he has announced loudly that *he* will accomplish this, and in so doing he has antagonised a lot of people, including the entire membership of the Committee ... When the campaign fails to achieve its goal in the allotted time, they will hit him hard and I'm afraid we'll get splattered with some of the mud.⁷⁹

Yet, despite their unhappiness, the appearance of civility was maintained. Meanwhile, EP political life became ever more confused. On 22 June the appointed Governor suddenly dismissed the elected EP government and took over administration of the province. Langmuir suggested to Usher that 'all in all it would seem very wise for the epidemiological team to withdraw as fast as possible; that is, as fast as can be achieved without rocking the boat or blowing off more booby traps'. Yet despite his feeling that the aid mission to EP had been a 'roller-coaster', a 'wild and wondrous ride', he called it a 'complete success' – for the ironic reason that it could have been so much worse.⁸⁰

When an elected EP ministry returned in August, political struggle among the major parties only intensified, leading to physical violence on the floor of the Legislative Assembly in October. Cockburn was somehow able to ride this roller-coaster while still attending to his duties.

Absorbing the lessons of the 1958 East Pakistan epidemics

After the EIS team returned to the USA in June, Langmuir and Usher prepared trip reports and sent detailed proposals to ICA and the EP Ministry of Health for strengthening anti-smallpox and anti-cholera measures.⁸¹ There was considerable back and forth of draft documents between Atlanta and Dacca, where Cockburn continued to be the EP point-person for public health. However, Cockburn and CDC epidemiologists were often at loggerheads about these proposed projects. A scathing note on a manuscript by an EIS officer reads: 'I'm getting

sick & tired of Cockburn's brief ridiculous letters – we probably should end all correspondence with the idiot – there seems no point in continuing these nonsensical arguments.⁸² Eventually, Cockburn realised his views were unwelcome to CDC, and he vented his bitterness in a note to his employers in ICA:

I regret that I was not consulted in the production of any of the CDC reports ... Reading through [them] one has the impression the CDC came, saw and conquered the epidemic single-handed, and that any achievements of the Pakistani government (which are hardly mentioned) or other teams were negligible ... One wonders what would have happened if [the CDC team] had not come here. Twenty million [sic] people would still have been vaccinated, and the programme would have gone on much the same ... In all the reports the CDC seems to be looking at the situation through American rather than Asian eyes.⁸³

While Langmuir and Cockburn were fundamentally on the same side – the side of scientific medicine, effective public health and American aid – their rapport had ended. Cockburn wrote to Langmuir to say ruefully: 'You once said that our basic philosophies were different. That is very true. You like to assemble facts in a selected order and build a kind of pyramid that is solid. I take a few facts and arrange them until I see a kind of general outline and then attempt to fill in the gaps. To you things are much more static than to me. To me, everything moves.'⁸⁴

In May 1959 the Twelfth World Health Assembly, meeting in Geneva, adopted smallpox eradication as an official WHO programme.⁸⁵ There was now considerable interest in what had occurred in EP the previous year. Langmuir and Cockburn were the obvious ones to give a public account, but their long-mooted, jointly authored article documenting the campaign was a casualty of their falling out. Instead, Langmuir and Usher decided to prepare an article presenting the aid mission's results from CDC's perspective, while Cockburn drafted his own article, defending volunteer methods and CPECC's record. Unusually, and perhaps uncomfortably for the authors, the articles appeared side by side without editorial comment in the January 1960 *Public Health Reports*, official journal of the US Public Health Service.⁸⁶

Langmuir and Usher agreed to focus on a single question: What light did the 1958 EP campaign shed on the problems of eradicating a

disease in a high-density setting? When faced with the need to commit himself to paper, however, Langmuir bowed out, writing to Usher, as follows:

We have read and been rather disenchanted with Dr. T. A. Cockburn's efforts at producing a publishable manuscript ... Reluctantly we have come to the firm conclusion that we do not have good enough epidemiological data to warrant a published paper ... we realize that we have a fine adventure story to tell, but not much of a scientific contribution to make ... If you wish to prepare some sort of manuscript ... you should feel perfectly free to do so.⁸⁷

Usher, who had some definite ideas about the EP campaign, accordingly prepared an article for publication. The article, entitled 'The Feasibility of Smallpox Eradication', ignored cholera to focus on smallpox. In a several tables and graphs it laid out the 1958 epidemic's total mortality, the rates of mortality, and age- and sex-specific mortality rates and presented similar data from past epidemics for comparison. Predictably, he painted a negative picture of volunteerism as a model for WHO eradication work. A discussion section then addressed the reasons that made smallpox eradication in East Pakistan such a challenge. One reason was that smallpox was deeply entrenched; despite demonstrably high rates of vaccination – between 80 and 90 per cent – the epidemiologists had been 'unable to find a correlation between the proportion of the population that had been vaccinated and either the time of onset or the intensity of the epidemic in various districts.'⁸⁸ In other words, mass vaccination in EP had not generated the 'herd immunity' that in other places favoured eradication.⁸⁹ Usher concluded that 'the time of epidemic onset and the intensity of the epidemic were more closely related to population density than to vaccination status.'⁹⁰

Such matters of fact – mortality, immunity, population density, endemicity – are the regular concerns of field epidemiology, and Usher's article put these features of the EP epidemic on a firm numerical basis. However, when he turned to answer a burning policy question – how to tackle entrenched smallpox in poor, densely settled countries – he departed from numerical evidence and entered the terrain of judgement. His key recommendation was that eradicators must be prepared to use constraint against 'groups that [respond] poorly to vaccination

campaigns and [experience] high attack rates.’⁹¹ To quote him at some length:

In the surveillance or ‘firefighting’ phase of an eradication programme selective vaccinating of exposed persons (sometimes referred to as ‘ring containment’) is, of course, desirable, but it is not considered advisable to rely entirely upon this for the emergency containment of outbreaks. This is especially true in a country like East Pakistan where health services are not fully developed, and there is a shortage of qualified personnel for the performance of contact investigations. In such circumstances it seems essential to rely on ‘area containment,’ that is, an immediate, very intensive campaign to raise to the highest possible level the vaccination status of a community where an outbreak has occurred. The successful execution of the ‘firefighting’ phase of the eradication programme where the problem is as difficult as it is in East Pakistan may require rather drastic measures, such as area quarantine, during the time required to vaccinate a community in which an outbreak has occurred. Enforcement of emergency measures will need to be determined and persistent.⁹²

Why did Usher recommend ‘drastic’, ‘determined’ and ‘persistent’ measures? What had he and other EIS epidemiologists seen in EP that made ‘emergency’ or ‘firefighting’ measures like area containment – meaning that whole villages would be corralled and no one could exit without vaccination, whatever their prior immune status – necessary? From their unpublished exchanges it is evident the CDC team had been appalled by the circus-like atmosphere whipped up during the 1958 ‘citizens’ campaign. Such popular methods, with their admittedly casual inoculation technique, uneven coverage, neglect of small children and thinly disguised political purpose, must never be repeated. Only trained health staff that possessed the will to take ‘drastic measures’ would succeed. Voluntary methods that wasted vaccine and depended on ‘herd immunity’ would never be able to enforce necessary discipline. To be sure, Usher’s views were consonant with post-war assumptions everywhere, which held that public health immunisation requires military rigour and organisation.⁹³

Cockburn’s article, ‘Epidemic Crisis in East Pakistan, April–July, 1958’, could not have been more different. While acknowledging the value of the CDC’s work collecting information from rural districts, he underlined the success of the volunteer-based approach and

recommended it as a model for the coming global eradication campaign. In a key passage he observed that:

Smallpox is easy to prevent; vaccination is simple and can be done by illiterate people. The vaccine is cheap and can be mass-produced. It should be possible for each country in Southeast Asia to vaccinate 90 percent of its people within a year and to repeat the operation every 3 to 5 years. The resulting level of immunity would probably cause the disease to disappear completely ... mass vaccination is not basically a medical undertaking but a layman's job of organisation, propaganda and logistics.⁹⁴

Indeed, Cockburn's position was that vaccination was a simple matter, even for children: 'The children easily picked up the vaccination technique from their teachers, who were trained by the sanitary inspectors. The teams of children, supervised by their teachers, worked in the villages around the schools.'⁹⁵ While unsterile technique, breaks in cold chain integrity, and poor record-keeping were admitted defects, Cockburn found them tolerable – his key finding was that eradication was attainable with sufficiently large numbers of motivated volunteers, abundant freeze-dried vaccine and 'herd immunity'. There was no need for careful training or even for exacting supervision. These were the very ideas that had driven Usher and his colleagues to distraction.

Conclusion

From a local perspective it was Bengali middle-class anxiety, conjoined with political opportunism and student enthusiasm, that briefly linked East Pakistanis to each other through the shared experience of vaccination; to that extent, the 'citizens' campaign' can be said to have strengthened a growing realisation among the educated middle class that Bengalis could act together to avert common dangers. This realisation, strengthened in later years by a series of natural and political disasters, ultimately led to Bangladeshi separatism and civil war. Yet, whatever the eventual nationalist benefits, a coup by the Pakistan Army on 24 October 1958 destroyed EP's tattered democracy and civil-society experiments.⁹⁶ From a global perspective the 1958 epidemics allowed a military-industrial behemoth, the USA, to project humanitarian aid and technical assistance into a contested region, cementing a strategic

alliance with Pakistan. Yet CDC epidemiologists, aiming to save lives and spread the doctrine of active surveillance, found themselves hampered by other actors with different agendas. At stake was whether CDC, authorised for the first time to operate abroad, could demonstrate its prowess in an international health crisis. While Langmuir considered the 1958 mission a failure, the State Department did not. US diplomats measured success mainly in terms of favourable Pakistani opinion of US assistance.⁹⁷ The CDC clearly reaped intangible benefits: cementing ties with ICA, USIS and NAMRU; negotiating with Pakistani ministers; laying the groundwork for a cholera research centre in Dacca; and debating virology with eminent Russian scientists – all matters that enhanced CDC's reputation and justified a further global role.

In time even Langmuir took a longer view of the EP mission. He wrote to Usher, 'Someday I have hopes of developing a truly adequate smallpox programme that can lead, both in this country and in the world eradication programme. The Dacca episode ... will constitute a major first step, premature, wild and wondrous as it was.'⁹⁸ He was right – 1958 *had* been premature; the vaccination campaign in EP was an experiment in the pre-history of global eradication. Fourteen years later CDC epidemiologists returned to Bangladesh and guided the final push in 1974–75 that halted smallpox transmission in Asia; active surveillance proved to be powerfully effective.⁹⁹ But, true to Usher's preferences, CDC's successful method of 'surveillance and containment' excluded the public and required the occasional use of force that would never have been tolerated in the USA.¹⁰⁰ In short, 'drastic, determined and persistent firefighting' was effective but hardly popular.

Cockburn would be pleased to learn that at present 'best practices' for immunisation campaigns include, as a matter of course, soliciting volunteers and forging collaborations with local leaders, activists and celebrities; present-day immunisation campaigns are communications-rich and share responsibility with parents, NGOs, political parties and other stakeholders.¹⁰¹ While he was no doubt erratic and impulsive, Cockburn was also visionary in seeing that disease control is as much a matter of social and political mobilisation, and a recognition that rights must be respected, as of strictly applying almost veterinary methods of restraint. This is especially true in settings of 'complex emergencies', where health crises are compounded by political instability,

excess mortality and a meltdown of markets and administration.¹⁰² At the same time, modern disease control campaigns rely heavily on CDC's tried and tested methods of intense surveillance and field investigation; at the time of writing there is a global network of field epidemiology training programmes in fifty countries, all based on Langmuir's training principles of quick responses, modesty in claiming credit and 'learning by doing'.¹⁰³ Hence, Usher and Cockburn were both right in their advocacy of essential elements for successful disease control programmes.

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Notes

- 1 The Communicable Disease Center (CDC) was established in Atlanta in 1946. For several decades the CDC was a small agency in a federal system that resisted centralisation of public health and firmly reserved disease control to the individual states. For a brief account see Bindu Tharian, 'Centers for Disease Control and Prevention', in *New Georgia Encyclopedia for Educators*, www.georgiaencyclopedia.org/articles/science-medicine/centers-disease-control-and-prevention (accessed 24 November 2016). For a full history, see E. W. Etheridge, *Sentinel for Health: A History of the Centers for Disease Control* (Berkeley: University of California Press, 1992).
- 2 Connections between epidemic threats and global diplomacy date from the mid-nineteenth century and a series of international sanitary conferences mostly concerned with the spread of cholera; see Valeska Huber, 'The Unification of the Globe by Disease? The International Sanitary Conferences on Cholera, 1851–1894', *The Historical Journal*, 49:2 (June 2006), pp. 453–76.

- 3 Key publications and documents for this episode are: A. D. Langmuir to Director, USOM/P Karachi, 'Epidemic Aid – Smallpox and Cholera, EP, First Progress Report' (June? 1958), in National Archives and Records Administration (NARA), Communicable Disease Center, Public Health Service (NARA, CDC Record Group 442.2.3, hereafter CDC-RG 442); US Epidemic Aid Team to EP, 'Smallpox in EP' (June? 1958), pp. 1–17 with appendixes, CDC-RG 442; G. S. Usher, 'Terminal Report: Epidemic Aid Mission to EP. May to July 1958', typescript (mid-November 1958), pp. 1–19, Records of the US Foreign Assistance Agencies, 1948–61/, ICA, Office of the Deputy Director for Ops, Office of Public Health, Near East, South Asia, Far East Division, Country Files, Pakistan 1954–60 (NARA, ICA-Record Group 469, hereafter ICA-RG 469); Glenn S. Usher. 'The Feasibility of Smallpox Eradication', *Public Health Reports*, 75:4 (1960), pp. 37–42; Thomas A. Cockburn, 'Epidemic Crisis in EP, April–July, 1958', *Public Health Reports*, 75:1 (1960), pp. 26–36. A more detailed draft version of Cockburn's article is 'Epidemic Crisis in EP, April–June, 1958', MS, 32 pages (CDC-RG-442). The author also maintains a personal archive of documents received from former EIS officers.
- 4 In August 1947 the British colony of India was partitioned at independence between Pakistan and India; simultaneously, the colonial province of Bengal was also partitioned between (Indian) West Bengal, with its capital at Calcutta (present-day Kolkata), and (Pakistani) EP, with its capital at Dacca (present-day Dhaka).
- 5 In the active delta – 40,000 square miles of low-lying alluvial plain criss-crossed by large and small rivers and subject to annual monsoon flooding – dense waterways allowed Bengalis to move about in small skiffs from paddy-growing and fishing villages to marketplaces and mosques, which favoured the steady transmission of pathogens.
- 6 D. A. Sack, R. B. Nair and A. K. Siddique, 'Cholera', *Lancet*, 363:9404 (17 January 2004), pp. 223–33. The International Center for Diarrheal Disease Research (IDDR-B), commonly called 'The Cholera Lab', was founded in Dacca in 1962 on the premise that the Bengal delta was cholera's primordial home.
- 7 While EP's disease reporting system was unable to determine exact morbidity and mortality, the reported prevalence of cholera in 1958 was 10,438 cases of which 6,684 died (CFR = 64 per cent); the corresponding reported figure for smallpox was 44,736 cases, of which 20,444 died (CFR = 46 per cent), Usher, 'The Feasibility of Smallpox Eradication', pp. 37–42, figures 1 and 2. See also Cockburn, 'Epidemic Crisis in EP', pp. 27–30.
- 8 Each of EP's 17 districts had a District Health Officer, a Sanitary Inspector with two assistants and a single vaccinator; two additional vaccinators

and three additional Sub-divisional Health Officers were temporarily appointed for three months in each district in 1958; Usher, 'Terminal Report', p. 6.

- 9 F. Fenner, D. A. Henderson, I. Arita, Z. Jezek and I. D. Ladnyi, *Smallpox and Its Eradication* (Geneva: World Health Organization, 1988), p. 811.
- 10 Vaccine was prepared from lymph harvested from calves' infected bellies. At least 600 calves were required each month. Usher gives monthly totals of smallpox vaccine manufactured in Dacca and imported from elsewhere during January–June 1958. Apparently up to 85 per cent of this amount was wasted because of the scarcity of refrigeration. See Usher, 'Smallpox in EP', p. 12, table 9.
- 11 No cholera vaccine was manufactured in EP in this period; all supplies were imported.
- 12 An overview of EP politics in this period is given in Willem Van Schendel, *A History of Bangladesh* (Cambridge University Press, 2009), pp. 107–20. The Pakistan National Assembly met in session twice a year, alternating between Karachi and Dacca.
- 13 The four leading EP political parties were the Muslim League (pro-Pakistan, anti-communist), the Awami League (pro-Bengal autonomy, anti-communist), the Krishak Praja Party (pro-Bengal autonomy, anti-communist) and the National Awami Party (pro-Bengal autonomy, pro-communist). A good political summary is G. W. Chowdhury, 'The EP Political Scene, 1955–1957', *Pacific Affairs*, 30:4 (1957), pp. 312–20. A fuller account is Salahuddin Ahmed, *Bangladesh Past and Present* (Dhaka: APH Publishers, 2004), pp. 138–51.
- 14 For example, 'Four more small-pox [*sic*] cases were admitted to the Mitford Hospital [Dacca] yesterday. It will be recalled here that almost daily four to six smallpox patients were being admitted to the hospital according to ... authorities', *Pakistan Observer* (6 April 1958).
- 15 For example, 'Distressing reports continue to be received about the havoc caused by the serious epidemics of smallpox and cholera raging in EP ... proof of the shocking – one could even say criminal – failure of the provincial health authorities to control the epidemic?', *Dawn* (Karachi), editorial (13 April 1958), p. 1.
- 16 'No Concrete Plan to Combat Epidemic', *Pakistan Observer* (Dacca, 10 April 1958), p. 1. Ataur Rahman Khan or ATA (1907–91) became Chief Minister of EP in September 1956 and held the position (with brief inter-regnums) until martial law was declared and democracy suspended in mid-October 1958.
- 17 'No Concrete Plan to Combat Epidemic'.

- 18 Aidan Cockburn to Assistant Director, USOM/Dacca, Confidential Memorandum of Conversation (23 July 1958), p. 2, ICA-RG 286. In time, CPECC grew to include sixty members, but operational control of the vaccination campaign was in the hands of a sub-committee of six or so persons.
- 19 Cockburn, 'Epidemic Crisis in EP', MS, p. 2.
- 20 *Ibid.*
- 21 For example, *Pakistan Observer* (13 April 1958).
- 22 In the March 1954 EP legislative elections, the Communist Party of Pakistan (CPP) entered the Assembly and deepened its influence by forming a united front with other parties. CPP candidates directly and indirectly won a total of 26 seats, making it an important legislative force. See Tariq Ali, *The Clash of Fundamentalism*. (London: New Left Books, 2002), p. 395.
- 23 See, for a narrative of the sequence of events leading to significant US aid to Pakistan in 1958, CDC, Epi Aid Memo 58-37-1 (7 May 1958). 'Epidemic Aid-Smallpox - Cholera', CDC-RG 442.
- 24 Cockburn, 'Epidemic Crisis in EP', pp. 27-30. The EP epidemic was an important trial for freeze-dried vaccine in semi-tropical conditions. There was commercial interest among US drug manufacturers to learn as much as possible about its continued potency at temperatures of more than 40 C (104 F). Foreign Service Despatch no. 362, Dacca (no date), CDC-RG 442.
- 25 *Ibid.*
- 26 CENTO = Central Treaty Organization (also known as the Baghdad Pact) and SEATO = Southeast Asia Treaty Organization. See Lubna Saif, 'Pakistan and SEATO', *Pakistan Journal of History and Culture*, XXVIII:2 (2007), pp. 77-90.
- 27 US, National Security Council, Record of Actions Taken, Acting Executive Secretary, to the National Security Council, 13 February 1956. DDRS Document Number: CK3100395518, www.archives.gov/research/search/ (accessed 1 June 2014). See also R. W. Benjamin and J. H. Kautsky, 'Communism and Economic Development', in *American Political Science Review*, 62:1 (March 1968), pp. 110-23.
- 28 The 1958 mission to Dacca by the NAMRU-2 team led to the establishment in 1960 of the Pakistan-SEATO Cholera Research Laboratory (the antecedent to the International Centre for Diarrheal Disease Research, Bangladesh ICDDR, B) in June 1979. See Cockburn, 'Epidemic Crisis in EP', p. 3.
- 29 Cockburn remained in Dacca through the mid-1960s and published a weekly column on public health issues for *The Morning News*. Foreign Service Despatch no. 42, Dacca, 18 December 1958, CDC-RG 442.

- 30 Cockburn (1912–81) obtained his medical degree from Durham and a doctorate in Public Health from the Royal Institute of Hygiene and Public Health, London, in 1940. Like Langmuir, he was a trained wartime epidemiologist whose skills became valuable in the post-war world. He worked at CDC from 1948 to 1954 and took US citizenship. He then made a career shift into international health and held WHO assignments in Egypt, Canada and Ceylon before arriving in Dacca. See J. L. Angel and M. R. Zimmerman, 'T. Aidan Cockburn, 1912–1981: A Memorial', *American Journal of Physical Anthropology*, 58:121 (1982): pp. 121–2.
- 31 The Communicable Disease Center was renamed the Centers for Disease Control and Prevention in 1992 but has retained the CDC acronym.
- 32 Langmuir's title at CDC was Chief of Epidemiology Branch and Director of the Epidemic Intelligence Service, a position he held from 1951 to 1970. See 'Alexander D. Langmuir – A Brief Biographical Sketch with Emphasis on his Professional Activities', *American Journal of Epidemiology*, 144:8, Supplement (October 1996), pp. S1–S10.
- 33 See S. B. Thacker, A. L. Dannenberg and D. H. Hamilton, 'Epidemic Intelligence Service of the Centers for Disease Control and Prevention: 50 years of Training and Service in Applied Epidemiology', *American Journal of Epidemiology*, 154:11 (2001), pp. 985–92; W. Schaffner and F. M. LaForce, 'Training Field Epidemiologists: Alexander D. Langmuir and the Epidemic Intelligence Service', *American Journal of Epidemiology*, 144:8 Supplement (1996), pp. S16–22; and A. D. Langmuir, 'The Epidemic Intelligence Service of the Center for Disease Control', *Public Health Reports*, 95:5 (September–October 1980), pp. 470–7.
- 34 At its creation in 1946 the CDC's scope was entirely domestic; however, with the support of the ICA/AID the CDC gained regular authorisation to send EIS officers and aid teams abroad.
- 35 A. D. Langmuir, 'CDC, Epi Aid Memo 58–37–1, 7 May 1958, Epidemic Aid–Smallpox – Cholera' and A. D. Langmuir, 'CDC, no date, 'Epidemic Aid–Smallpox – Cholera, First Progress Report', CDC–RG 442.
- 36 T. A. Cockburn, C. A. Sooter and A. D. Langmuir, 'Ecology of Western Equine and St. Louis Encephalitis Viruses. A Summary of Field Investigations in Weld County, Colorado, 1949 to 1953', *American Journal of Hygiene*, 65 (1957), pp. 130–46.
- 37 Individual CDC personnel had gone abroad before 1958, and CDC officers occasionally accompanied foreign delegations.
- 38 A. D. Langmuir, 'The Surveillance of Communicable Diseases of National Importance', *New England Journal of Medicine*, 268:4 (24 January 1963), pp. 182–3; A. D. Langmuir, 'Newer Surveillance Methods in the Control of Communicable Diseases; Developing Concepts in Surveillance', *Milbank Memorial Fund*, Q 43:2, pt. 2 (1965), pp. 369–72; and A. D.

- Langmuir, 'Evolution of The Concept of Surveillance in the United States', *Proceedings of the Royal Society of Medicine*, 64 (June 1971), pp. 9–12.
- 39 As described in Fenner *et al.*, *Smallpox and Its Eradication* (Geneva: World Health Organization, 1988), p. 817.
- 40 *Time*, *Newsweek* and other mass magazines fostered the disease detective image. From the 1960s through the 1980s Langmuir maintained a working relationship with a staff writer at the *New Yorker*, who published striking articles about EIS sleuthing in a recurring column, 'The Annals of Epidemiology'.
- 41 Langmuir, 'The Surveillance of Communicable Diseases of National Importance', p. 183.
- 42 S. B. Thacker and M. B. Gregg, 'Implementing the Concepts of William Farr: the Contributions of Alexander D. Langmuir to Public Health Surveillance and Communications', *American Journal of Epidemiology*, 144:8, Supplement (1996), pp. S24–5. The official history of the World Health Organization recognises that 'active epidemiological surveillance' was a powerful mid-century public health advance but fails to acknowledge CDC's role in refining it. See WHO, *The Second Ten Years of the World Health Organization, 1958–1967* (Geneva: WHO, 1968), pp. 94–6.
- 43 A. Cockburn to Assistant Director, USOM/Dacca, Confidential Memorandum of Conversation, 23 July 1958, page 2, ICA-RG 286.
- 44 *Ibid.*
- 45 Langmuir earlier spent several weeks in Dacca during August–September of 1954 when the State Department sent him to assist with threatened epidemics during a major flood. No epidemics developed, and he considered the trip a waste of time. A. D. Langmuir to Sally Langmuir, 2 September 1954 (aerogramme), Alan Mason Medical Archives, Johns University, Alexander Langmuir papers (hereafter Langmuir Papers).
- 46 Besides Langmuir and Usher the CDC team included Drs Frederick Dunn, James Mosley, Yates Trotter, Jacob Brody, Bruce Dull, Chandler Dawson and Malcolm Page. Teams from other agencies and countries arrived in Dacca in the same month to assist with epidemic control – a nine-man American military team from NAMRU-2, as noted, a six-member delegation of microbiologists from the USSR, 20 experienced vaccinators from Afghanistan, and a single French researcher. Cockburn, 'Epidemic Crisis in EP', p. 5, table 2.
- 47 'USSR Medical Team in Karachi', *Pakistan Observer* (12 May 1958) and 'Russia Medical Aid Lauded' *Pakistan Observer* (13 May 1958). For

- the Russian account, see B. N. Pastukhov, 'Visit of Soviet Doctors to Pakistan to Assist in the Campaign Against Cholera and Smallpox' (English translation from Russian), *Journal of Microbiology, Epidemiology and Immunobiology*, 30:2 (1959), pp. 148–51.
- 48 Consul General's dispatch no. 317, Dacca, 'Political Aspects of Epidemic and Food Shortage in EP' (15 May 1958), p. 3, ICA-RG-469.
 - 49 'It soon became apparent that we could not function in the manner that had been specified in the cable requesting our services, namely to "principally organize control [of] mass vaccination throughout EP". In order to perform in this way it would have been necessary to confer administrative authority upon our team members. This was manifestly not feasible.' Usher, 'Terminal Report', p. 8.
 - 50 'Four-Stage Plan to Eradicate Epidemics', *Pakistan Observer* (19 May 1958). After this date there is less evident concern about cholera in the press record, and smallpox becomes the chief preoccupation.
 - 51 Government of EP and Provincial Epidemic Control Committee. Director of Public Relations, *Eradication of Smallpox and Cholera: A Plan for EP* (Dacca, May 1958), 3 pages. A million copies were printed in Bengali and English, CDC-RG 442.
 - 52 According to Cockburn, it was he who conceived the eradication campaign, but the decision to launch was taken by the Pakistan health minister with the concurrence of the EP Chief Minister. Though they belonged to different parties, both could share in the glory of eradication, which Cockburn assured them was feasible. In Cockburn's words, 'I suggested that something Churchillian was needed – "we shall vaccinate them in the towns, we shall vaccinate them in the paddy fields, etc. etc." I left Mr Huq and the Chief Minister discussing what I said.' Cockburn to Assistant Director, USOM/Dacca, Confidential Memorandum of Conversation (23 July 1958), p. 3, CDC-RG 286.
 - 53 Cockburn, 'Epidemic Crisis in EP', p. 16.
 - 54 It is unclear whether Cockburn knew about contemporary mainland Chinese methods of mass mobilisation for disease control. As a WHO physician he was better informed than most about new developments in public health, and communist politicians in Bengal were in direct contact with Chinese diplomats.
 - 55 A. Cockburn to Assistant Director, USOM/Dacca, Confidential Memorandum of Conversation (23 July 1958), enclosed on p. 4, ICA-RG 286.
 - 56 The USSR's representatives proposed smallpox eradication to the WHA in June 1958. The Assembly decided on one year of further study, and the eradication programme was not adopted by the WHA until 1959. See Fenner *et al.*, *Smallpox and Its Eradication*, pp. 366–71.

- 57 'Eradicating epidemics from E. Pakistan; Dr. Langmuir Hopeful', *Pakistan Observer* (16 May 1958); 'East Wing Will Be Able to Eradicate Smallpox – US Expert', *Dawn* (Karachi, 25 May 1958).
- 58 There were competing, party-political efforts to recruit students as vaccinators. For example, the Krishak Sramik Party's Youth League set up an Epidemic Control and Famine Relief Committee that sent students to villages, *Pakistan Observer* (14 April 1958), p. 1 and *Pakistan Observer* (15 May 1958), p. 1.
- 59 Students had spearheaded the Language Movement (1952–56). In an infamous clash with police, three students were killed on the Dacca University campus on 21 February 1952, an event that is memorialised every 21 February as a Bangladesh national holiday. See 'Language Movement', *Banglapedia, National Encyclopedia of Bangladesh*, revised 2nd edn (2012), www.banglapedia.org/HT/L_0066.htm (accessed 12 June 2014). http://en.banglapedia.org/index.php?title=Language_Movement (accessed 24 November 2016).
- 60 Interviews in Dacca with Professor K. M. Mohsin (20 February 2013) and Professor Abdul Momin Chowdhury (23 February 2013), who were recruited as vaccinators by Cockburn in May 1958.
- 61 Despite this campaign in Dacca, smallpox continued at a low level in the city throughout 1958; an August 1958 survey found that 5 per cent of the population in municipal Dacca and 16 per cent of the population in non-municipal Dacca had not been vaccinated. T. A. Cockburn to A. D. Langmuir (10 September 1958) enclosing 'Survey to Determine the Vaccination Status of the Population of Dacca August 2–7, 1958', 3 pages. CDC-RG 442.
- 62 Cockburn, 'Epidemic Crisis in EP', p. 46. Four rupees would buy approximately 1 lb of raw rice. 'Government to Raise Rice Prices', *Pakistan Observer* (11 May 1958), p. 1.
- 63 The vaccination campaign coincided with intense factional conflicts in the Awami League as well as fights between it and other parties; hence 'leaders of the Government parties as well as the Opposition are literally stumping the province ... to give the people their version of the food problem and the epidemics'. US Consul General, dispatch no. 317, Dacca, 'Political Aspects of Epidemic and Food Shortage in EP' (15 May 1958), 'Comment', p. 4, ICA-RG-469.
- 64 The 'cold-chain' refers to efforts made to ensure appropriate low-temperature storage and transportation so that vaccines arrive in field settings without spoilage or loss of potency.
- 65 Cockburn, 'Epidemic Crisis in Bengal', pp. 17–19.
- 66 *Ibid.*, pp. 9–13. Government vaccinators also sometimes pitched their vaccine supplies.

- 67 F. Dunn (?), 'Administrative Confidential Report, Progress of Volunteer Smallpox Vaccination Program in Tippera District', mimeograph enclosure to letter, T. A. Cockburn to R. C. Kriegel (24 June 1958), CDC-RG 442.
- 68 *Ibid.*
- 69 Fenner *et al.*, *Smallpox and Its Eradication*, p. 811.
- 70 Usher, 'The Feasibility of Smallpox Eradication', p. 37.
- 71 Usher, 'Terminal Report', pp. 8–9.
- 72 *Ibid.*, pp. 2, 9–11. When Langmuir returned to the USA at the end of May, Usher was left in charge.
- 73 'It is impossible with volunteers to concentrate activities upon the segments of the population that are in greatest need of vaccinating', Usher, 'Terminal Report', *Ibid.* p. 11, ICA-RG- 469.
- 74 'Supplementary Report to USOM/EP, Epidemic Aid Mission to EP, July 19, 1959', mimeograph document, RG 469, p. 11.
- 75 US Epidemic Aid Team to EP, 'Smallpox in EP' (June? 1958), pp. 1–17 with appendixes, CDC-RG 442; US Epidemic Aid Mission to EP, 'Supplementary Report to USOM/EP, July 19, 1959', ICA-RG 469; Usher, 'Terminal Report', p. 11, ICA-RG-469.
- 76 G. Usher to A. Langmuir, aerogramme (22 June 1958). CDC-RG 442.
- 77 Usher prevailed on Cockburn to take Miltown, noting in a letter to Langmuir that, 'I am opposed to the promiscuous use of tranquilizers but think in Aidan's case it is fully justified and its regular use will have a remarkable effect', Usher to Langmuir, aerogramme (20 June 1958). CDC-RG 442.
- 78 G. Usher to A. Langmuir, aerogramme (12 June 1958), CDC-RG 442.
- 79 *Ibid.*
- 80 A. Langmuir to G. Usher, personal letter, 27 June 1958, p. 2, CDC-RG-442.
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- 92 *Ibid.*, p. 41.
- 93 As noted in D. Vargha's chapter in this volume, 'Vaccination and the Communist State: Polio in Eastern Europe'.
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