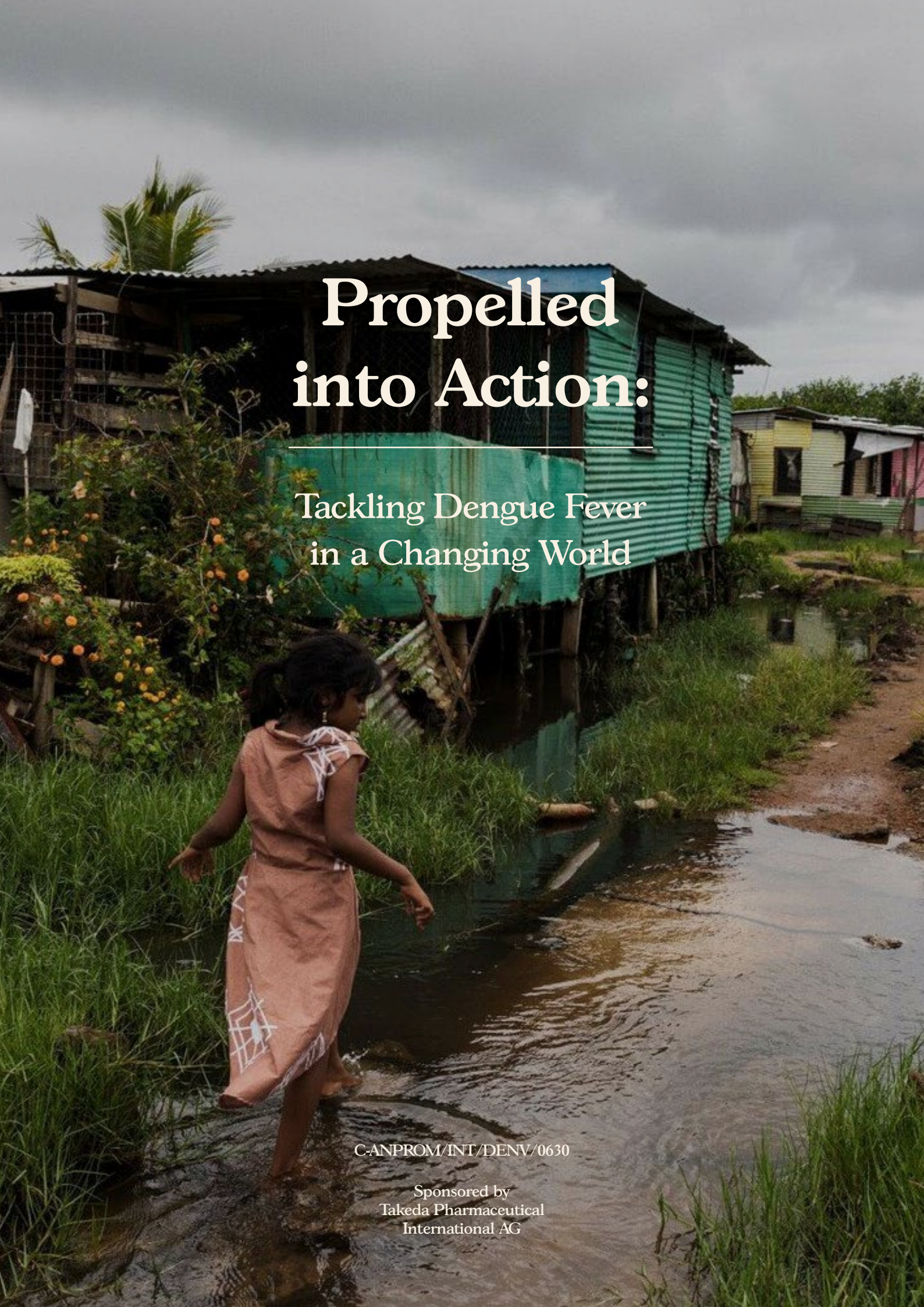

Propelled into Action:

Tackling Dengue Fever in a Changing World

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Dengue fever in a changing world

Professor Ooi Eng Eong, Professor in the Program in Emerging Infectious Diseases, Duke-NUS Medical School

In an era where the convergence of climate shifts and health crises presents a formidable challenge, a steadfast resolve to tackle diseases like dengue fever takes center stage. We sit at the foot of a genuinely global challenge. Today, Brazil has the largest number of dengue cases globally[i], Bangladesh has reported a large dengue outbreak, the disease is endemic to 34 African countries[ii]. In Southern Europe, much of the summer months are now spent on high alert for dengue.[iii]

Challenges within dengue do not exist in a vacuum, as marked by the first dedicated health day at a COP summit which took place in Dubai in December 2023, the relationship between climate change and human health can no longer be ignored. The impact of climate change on human health is a now problem, not a theoretical future problem. Health is the human face of climate change.

Globalization has fueled the spread of dengue, bringing both Aedes aegypti and dengue viruses into new environments, and expanded urbanization (planned and unplanned) has created suitable habitats for Aedes aegypti and Aedes albopictus mosquitoes. This has created a need to communicate the risk that urbanization and city expansion causes in relation to dengue and other vector-borne diseases.

Climate change is already changing the dengue landscape. Rising temperatures and changing rainfall patterns have allowed Aedes mosquitoes to thrive in new places including Europe and North America where health systems have little experience with this disease. Patterns of dengue virus transmission have also changed in intensity and now persist for longer periods each year in dengue endemic regions.

As climate change continues to transform cities around the world, coastal cities may need to expand inland as sea levels rise. New cities will be built, and more people will be forced to migrate away from places that are uninhabitable in the future. The geographic footprint of dengue will thus expand, putting even more people at risk of preventable disease and adding further pressure to fragile health systems.

The first Global Dengue Forum meeting which took place in December at the sideline of COP28 in Dubai, was timely and captured the urgency of the moment. It was intentionally cross-disciplinary; enabling rarely convened discussions between scientists, economists, city planners and engineers, on how conventional and new disease control strategies can be integrated into dengue prevention programs and health policies.

Finally, it was a call to action; the world needs to act collectively and act now on innovative interventions that are integrated in current health systems. If not, the expansion of dengue into new places and affecting new populations will be inevitable.

Credit, Freuds

Credit, Freuds

EXECUTIVE SUMMARY

Addressing the global burden of dengue requires a dedicated, collaborative, and cross-disciplinary approach, reinforcing the need to vigorously apply existing approaches while galvanizing innovation, technology and research in a way that propels change to protect communities from dengue. This is an action-orientated report, developed out of the Global Dengue Forum, a Takeda organized and sponsored event which took place on 5th December 2023 in Dubai, UAE, alongside the 2023 United Nations Climate Change Conference or Conference of the Parties of the UNFCCC, more commonly known as COP28. It highlights the unmet need and "call-to-action" voiced by experts from across the health, climate, and built environment sectors, for future intent to partner together on the goal of minimizing risk from dengue for future generations.

THE UNMET NEED

As the climate warms and provides an expansion of the hospitable environment for the mosquitoes that transmit the dengue virus, cases are rising with far reaching consequences. Now affecting over 120 countries[iv], dengue fever costs lives and livelihoods, placing a substantial burden on health systems, leading to disability, and impeding on individuals' capacity to work or complete education.[v] The anticipated annual global economic impact of dengue is nearly 9 billion USD, which is steadily rising.[vi]

DRIVING FORWARD A COLLECTIVE MOVEMENT THROUGH COMMITMENT FROM PARTNERS

Now is the time for action on dengue. This report captures seven key ideas developed at the Global Dengue Forum across core themes of urbanization, innovation, and advocacy. Securing commitments from motivated partners for collective action will be the first step we need to take to enhance dengue resilience in our evolving world.

DESIGNED BOTH TO INSPIRE CHANGE AND LAY THE FOUNDATIONS FOR ACTION, THIS REPORT HAS THE FOLLOWING OBJECTIVES:

1. Highlight the call-to-action

2. Distil insights from the workshop into collective action not only for those who were present and for others committed to a healthier future in the face of our changing climate.

3. Shine a light on a roadmap for change. In both the shorter and longer term, there is tangible opportunity for collective action.

A ROADMAP FOR COLLECTIVE ACTION

The final section of this report suggests the steps that can be taken to enable this change including formalizing collective action, mapping areas of greatest unmet need and establishing workstreams and necessary partners.

Our collective mission demands unwavering collaboration, fuelled by impact and innovation. Together, we don't merely envision a shared future; we actively shape it - a new era of transformative collaboration to address urgent challenges within dengue fever.

This report, "Propelled into Action: Tackling Dengue Fever in a Changing World" (Report), was developed from the Global Dengue Forum, an organized and sponsored event by Takeda that took place on December 5th, 2023, in Dubai, UAE (Event).

This Report aims to capture the outcome of discussions of the participants at the Event and does not necessarily reflect the position of Takeda, institutions, or any advisory groups with which the attendees are affiliated. While all reasonable steps have been taken to ensure the accuracy of the information provided here as of the date of this Report, Takeda cannot certify the accuracy and completeness of any of the information provided. Takeda shall not be responsible or in any way liable for any errors or omissions or any action taken or non-action in reliance upon this Report.

Seven Ideas:

TACKLING DENGUE IN A CHANGING WORLD

The workshop distilled seven key ideas from three overarching themes, critical in the fight against the burden of dengue and other mosquito-borne diseases: urbanization, innovation, and advocacy. This structured approach enabled participants to pinpoint specific technical challenges, engage in critical discussions about the current landscape, and underscore the imperative for a cross-disciplinary approach to tackle these issues effectively.

In the following sections of this report, we share detailed insights and potential actions derived from the workshop discussions, shining a light on the opportunity for collective action. The themes are not presented in order of priority, rather captured in a way which represents, and groups thoughts and ideas captured during discussions at the forum.

Urbanization

1. Ensure dengue has a seat at the table for climate negotiations.
2. Integrate dengue control strategies into urban planning (including attention to standing water and sustainable water management practices).
3. Encourage sustainable urban growth and protect informal populations.

Innovation

4. Invest in technological innovation to predict, prevent, test, and treat.
5. Engage communities and build public health interventions from the ground up and the top down.

Advocacy

6. Raise awareness and mobilize resources to address inequalities and protect those most at risk.
7. Foster collaboration between governments, municipalities, communities, public, private and the philanthropic sector to drive awareness and collaborative problem solving.

WITH THANKS TO THE FOLLOWING PARTICIPANT ORGANIZATIONS:

ADVA Asia Dengue Voice & Action Group

Aon

Arctech Innovation

Bayer

BSR

Clinton Health Access Initiative (CHAI)

DNDI (Drugs for Neglected Diseases initiative)

Duke-NUS Medical School

FIND (Foundation for Innovative New Diagnostics)

Global Institute for Disease Elimination (GLIDE)

International Federation of Pharmaceutical Manufacturers & Associations (IFPMA)

International Society for Neglected Tropical Diseases (ISNTD)

London School of Hygiene and Tropical Medicine

Malaria No More

MSD

Reckitt

Resilient Cities Network

Takeda

The International Society for Neglected Tropical Diseases

The Rockefeller Foundation

TIBA (Tackling Infections to Benefit Africa)

Uniting to Combat Neglected Tropical Diseases

World Mosquito Program

This workshop was hosted by Goals House, https://www.goalshouse.com/, an event network and initiative centred around the UN Sustainable Development Goals.
This report style uses Goals House branding.

1

Urbanization

ENSURE DENGUE IS AT THE TABLE FOR CLIMATE NEGOTIATIONS

WORKSHOP INSIGHTS

This group recognizes that neglected tropical diseases (NTDs) are impacted by climate change and that dengue fever is an indicator disease of climate change.

As the climate changes, vector-borne diseases are increasing and moving to new regions. Modelling shows that areas that are non-endemic currently, like some regions of southern Europe, are witnessing an increase in the number of locally transmitted dengue cases and are set to potentially experience regular dengue outbreaks and other vector-borne diseases by 2030 if climate change continues as predicted.[vii]

Urgently adapting to climate change and its impact on health is crucial for limiting its effects on the global population, and particularly people in regions impacted most greatly. As part of this, limiting the geographical expansion of the mosquitoes that transmit dengue fever to counter the impacts of climate change is crucial.

ACTIONS

Position dengue fever as an indicator for climate and health challenge globally

- It is important to position dengue, alongside other mosquito-borne diseases like malaria, zika or chikungunya as climate and health sensitive diseases to leverage efforts and help prioritization.
- Raise awareness of the specific threat that dengue places on urban populations and their health care systems as cities around the world are expanding.

Engage with in-country experience to build dengue resilience in endemic regions.

- There is a need to strengthen the evidence base around the most effective local approaches and identify scalable solutions to amplify global learning and fund evidence and data gathering locally that builds community resilience.

"The time for action is now, discussions are already happening, this is the perfect opportunity"

MARTIN EDLUND, MALARIA NO MORE

2

Urbanization

INTEGRATE DENGUE CONTROL STRATEGIES INTO URBAN PLANNING (INCLUDING ATTENTION TO STANDING WATER AND SUSTAINABLE WATER MANAGEMENT PRACTICES).

WORKSHOP INSIGHTS

There is a need to ensure that dengue prevention strategies sit at the heart of urban planning both for existing and future urban developments.

Urban design and infrastructure have a unique role in vector-borne disease in that it can either mitigate or exacerbate vector breeding sites. It is because of this that there needs to be a large urban planning effort to reduce the impact of health threats from climate change, designing cities that mitigate against dengue transmission and ensuring that architects and urban planners are educated about vector control is paramount to stopping the spread of dengue. Big picture innovation and attainable, community level interventions are both necessary.

Community level interventions should also be funded in existing urban developments threatened by dengue such as kits to adapt water storage containers.

As the global population increases, the demand for storing clean water rises. With the climate changing – leading to more extreme weather events – ensuring safe water supplies and storage is crucial to preventing the breeding spread of mosquitos.

"By 2050, 70% of the world population will live in urban areas, and everyone living there will need (and should have access to) clean water. But this water is the same water that will provide the perfect habitat for mosquitos."

Dr Alex Hiscox, Arctech Innovation

"We need to step out of the standard box and think about how we approach wastewater surveillance for vector control. In cities this is easy but in rural areas less so, though getting easier. We need a checklist of the samples we need and how to find them. The same applies to sequencing, where we don't need to know what we are looking for specifically. We can capture a huge amount of data from a minute sample of water."

Kevin Tetteh, FIND

ACTIONS

Incorporate dengue prevention (and mosquito control) into urban design.

- This change must start with education, upskilling existing workforces and incorporating vector control into professional qualifications.
- Sustainable water management practices should be implemented more widely, including storage of water in biodegradable materials rather than plastic. Rainwater harvesting should also be promoted, with an emphasis on maintenance and inspection of water sources and storage areas and mandating design elements and policies that discourage stagnant water accumulation.
- Incorporate mosquito prevention frameworks in the design of green spaces and new city builds (eg., BiodiverCity in Malaysia[viii]), overhauling drainage in densely populated urban and slum cities with sustainable drainage systems and data-driven predictive models to help populations to better prepare for outbreaks. (see more detail in Idea Four)
- Collaborate with designers and city planners to ensure that existing and new urban development mitigate against vector breeding sites including ensuring any water storage is properly covered and that infrastructure is updated to ensure that water supply is via pipes preventing the need to store water.
- Climate mitigation strategies such as green infrastructure (more trees, green roofs) and urban cooling facilities should consider dengue prevention methods when being developed.

Implement affordable water storage solutions at a community level.

- Covers for water being stored at home and school level education campaigns are actionable and low-cost steps can change vector breeding habits immediately, but ensuring safe and equitable supply to households is paramount, limiting the need to store water at all.
- In dengue endemic and densely populated urban areas the use of biological vector control measures should be considered (such as larvivorous fish in non-drinking water containers).[ix]

3

Urbanization

ENCOURAGE SUSTAINABLE URBAN GROWTH AND PROTECT INFORMAL POPULATIONS.

WORKSHOP INSIGHTS

Currently over a billion people live in informal urban settlements.[x] Amidst the imperative of global expansion, there is a need to advocate for sustainable urban development.

There is a need to embed a range of public health interventions that anticipate the health impacts of climate change including those that mitigate dengue transmission, particularly among migrating populations and those living in urban slums.

Identify ground-level, community-led initiatives that work and determine which ones can be scaled. Local services to improve living conditions should be prioritized, alongside long-term investment to upgrade slum dwellings and lift people out of poverty. Preventing dengue also supports the wider economy and impact on the workforce (particularly those working in manual labor who are most at risk of mosquito bites).[xi]

ACTIONS

Upgrade slums and other dense urban environments to break poverty cycle in the long term through investment in local communities.

- For those already living in dense urban areas, practical short-term solutions like safe water storage and mosquito nets should be provided as a base-level requirement to upgrade living conditions and reduce mosquito breeding grounds.

Harness technology to accurately track the movement of people from endemic areas.

- Self-reporting and data tracking via mobile apps is already used during periods of mass movement – for example Chinese New Year, and during the COVID-19 pandemic. A similar use of technology and self-reporting could be used to track dengue fever outbreaks, enabling governments to predict outbreaks before they occur and adapt health systems to respond. (see more in Idea Four)

- Focus on advocating for urban policies that promote health, prevent disease, and foster inter-city collaboration for the future.[xii]

- Migration provides an opportunity for public health reform because 60% of the land that is due to be urban is yet to be built on.

- Thinking ahead by planning for 20 and 50-years' time can ensure that urban environments are built to prevent dengue and other vector-borne diseases from spreading and support vulnerable populations.

- Preparing for greater numbers of people living in cities in a way that also prevents dengue requires multisector action with sectors including agriculture, food, transport, and housing all working together with a shared vision for population health.

"People moving to cities goes hand in hand with climate change. As the climate is changing, farmers in Africa cannot sustain living farming livestock, so they move to urban cities for work. There's a fundamental need to address poverty, to look at how you work with people working in agriculture and food production. Bringing in other sectors and working with them to improve people's livelihoods will minimize this mass migration."

Thoko Elphick-Pooley, Uniting to Combat NTD

4

Innovation

INVEST IN TECHNOLOGICAL INNOVATION TO PREDICT, PREVENT, TEST, AND TREAT.

WORKSHOP INSIGHTS

There is a need for a comprehensive suite of existing and new tools for tackling dengue, including data-driven interventions that are pivotal for planning and budgeting. There is a need to vigorously apply existing approaches (such as testing, vaccination and Wolbachia mosquito adaption techniques) while galvanizing existing innovation, technology and research in a way that propels change to protect communities from in dengue.

The goal is to make technology accessible, context-specific, and cost-effective, avoiding a one-size-fits-all approach, acknowledging too that programs and policies can also be innovative.

Economists' involvement in dengue prevention helps articulate the return on investment, emphasizing the need to position interventions as multiplexing solutions, impacting multiple vector-borne diseases while ensuring value for money.

Artificial intelligence (AI) and machine learning (ML) can be used to predict where to build new urban developments based on vector tracking, using global datasets to look at where water channels should be built. For example, UNICEF's Innovation and Climate teams collaborated with partners to create an AI model which predicts future outbreaks.[xiii] More widely than dengue, AI and ML are now regularly used within the building industry, particularly in relation to sustainability.[xiv]

"We are all data machines. We should harness this and encourage people to report dengue by paying for this data."

Dafydd Green, ADVA Asia Dengue Voice & Action Group

"Innovation alone is not enough; we need equitable access to these tools by people who need them the most – innovation and access need to go together hand in hand."

Ritika Datta, DNDI

"If we can generate enough momentum to incorporate AI and machine learning for vector tracking into urban environments and building regulations, it would mean urban planners and governments could be provided with maps indicating the most at-risk areas and recommend where to avoid building."

Dr Alex Hiscox, Arctech Innovation

ACTIONS

Utilize advancements in surveillance and data capture to prevent dengue.

- Leveraging data-driven surveillance systems and advanced technology like remote sensing can identify areas at risk of mosquito breeding, enabling targeted interventions.
- Involving consenting individuals in data mining to report dengue cases would support local public health efforts.
- This could be done through a geolocation app (similar to a weather app) tailored to local needs and be supported by campaigns encouraging local populations to capture data via smartphones and would support governments, communities and individuals to be more informed about the dengue situation in their area.

Combine high- and low-tech interventions.

- High-tech solutions can exclude some communities. The focus should be on developing both technological pipelines and strengthening existing interventions such as water covers, bite prevention, mosquito control, diagnostic tests in medical facilities and medicine to prevent more serious illness forming.
- Recognizing the significance of, and funding appropriately, simple yet critical interventions like safe water, sanitation, and hygiene (WASH) efforts will also help to bridge the gap between diagnostics, treatment, and prevention measures, ensuring contextually appropriate and equitable delivery.

Strengthen economic modelling efforts, alongside other NTDs.

- Strengthening economic modeling efforts that can demonstrate the economic costs of not acting vs. the return on investment for those that will reduce the dengue burden in communities can be used to show policymakers the impact of dengue.

Use technology as a predictive tool to prepare for outbreaks in the medium term and plan building in the longer term.

- Showing building companies, developers, mayors, and city planners how to predict dengue impact on build sites through AI and technology assisted prediction tools to prevent future economic burden.
- Outbreak prediction modelling can be used to prepare health systems and governments in advance of outbreaks and ensure prevention methods are in place on the ground and hospitals are ready to provide care ahead of an outbreak.

5

Innovation

BUILD PUBLIC HEALTH INTERVENTIONS FROM THE GROUND UP AND FROM THE TOP DOWN.

WORKSHOP INSIGHTS

Forearmed is forewarned; strengthening dengue surveillance and modeling will help communities address current and future threats. In addition to traditional surveillance, layering in climate and other data can provide actionable insights sooner.

There is also a need to bring innovation as close to the end user as possible and remove barriers to adoption.

Interventions should be developed within the context they are seeking to serve and avoid a one-size-fits-all approach which could be unattainable for less developed regions. At the same time, policymakers should be provided with the data and insights needed to bring equitable solutions to their populations.

When it comes to dengue prevention, local communities in dengue endemic areas will have strong, generational knowledge on prevention techniques through lived experience which should be actively sought.

Framing interventions in a way that shows that they address multiple issues (like other health impacts of climate change including the mosquito-borne diseases) simultaneously is key for making the economic case. Diagnosing dengue can be a challenge which can be overcome with better diagnostics. Effective diagnostic tools would also reduce prescribing of antibiotics reducing antimicrobial resistance globally, which, alongside climate change is a major threat to health.[xv]

"We have public health tools such as introgressing Wolbachia into Aedes aegypti to block dengue transmission and vaccination that could impact the way we prevent dengue. However, none of these new tools is a silver bullet. Integration of all the tools we have will be needed to control dengue. How the tools should be integrated and, critically, adopted by public health authorities must be addressed."

Prof Eng Eong, Duke NUS Medical School

"Home testing during COVID-19 made a massive impact, if we had similar tests for dengue this would take pressure off healthcare systems. If we can get to true, non-invasive testing then we're addressing multiplex aspect and getting more bang for your buck. This would be really innovative, but we still need to think about access in primary healthcare this takes pressure off the whole systems this would make a big impact."

Dafydd Green, ADVA Asia, Dengue Voice & Action Group

ACTIONS

Trust local knowledge and fund local led intervention.

- Identifying and encouraging local solutions and including communities in funding decisions about vector control empowers them to address the issue but also builds trust and respects local knowledge.
- Taking learnings and consult from leaders in dengue endemic countries is also key to successful prevention.

Make the economic case.

- Dengue control not only saves lives and livelihoods but can also reduce the economic burden of the disease. Economic modelling for dengue prevention exists globally, with several papers highlighting the economic benefits of preventative action.[xvi, xvii]
- Collaborating with economists and using existing data in communication with policymakers to further articulate the return on investment in public health interventions would help to drive public demand and government resource.
- Whilst making the economic case it is also important to talk about the pipeline of solutions and tools as well as the problem.

Develop innovation in diagnostic testing and implement initiatives ensuring equitable availability.

- To treat illness effectively, a sensitive and specific diagnostic is critical as dengue symptoms are unspecific.
- Support the equitable roll out of non-invasive, user-friendly, rapid diagnostic tools for dengue and the timely availability of effective treatments for those infected. This would also reduce overuse of antibiotics and decrease progression to more severe disease.[xviii]

Continue to invest in medical initiatives for dengue prevention and treatment.

- Vaccination will be critical in reducing the impact of dengue. Partnerships between manufacturers, global actors, procurement bodies and national governments is crucial for the prevention of dengue.
- Alongside prevention, there is a need for an appropriate treatment to prevent medical complications and progression to severe disease which would decrease the overall burden on public health systems.

"We need non-invasive, rapid diagnostic tools for dengue and effective treatments. To treat people, you need to know what disease they have and with dengue there are no specific symptoms and no current point of care diagnostics. In Africa, dengue patients are mistakenly treated with antimalarials and antibiotics, which do not work for dengue fever and apart from the ensuing treatment failure it's also a big out of pocket spend for affected people and their families."

Professor Francisca Mutapi, TIBA (Tackling Infections to Benefit Africa)

6

Advocacy

RAISE AWARENESS AND MOBILIZE RESOURCES TO ADDRESS INEQUALITIES AND PROTECT THOSE MOST AT RISK.

WORKSHOP INSIGHTS

There is a need to elevate the importance of dengue and its accelerated spread due to climate change to global leaders and health experts whilst increasing global health funds for equitable initiatives to enhance overall health system resilience.

Work should continue in bridging healthcare access gaps, reducing socio-economic disparities, and empowering communities across the board, not just in dengue. Within this, there is a need to mitigate potential disparities in solution development and distribution, especially between the global south and global north.

It is important that, amid shrinking foreign aid budgets, there is an emphasis on harmonizing existing structures and maximizing impact. Within dengue there is an opportunity to tailor epidemiological modeling and communication for accessibility to governments, city planners, and private investors, in a way which brings dengue into conversations about global public health and equity.

ACTIONS

Position data around dengue alongside other NTD to mobilize funds within existing funding mechanisms.

- Prioritize harmonizing existing efforts amid shrinking foreign aid budgets.
- Communicate epidemiological modelling effectively for key stakeholders like governments and private investors and encourage additional accurate data collection.
- Showcase economic benefits of data utilization, contributing to population well-being and job creation.
- Maximize impact by optimizing current aid frameworks for coherence and coordination.

Learn from the COVID-19 vaccine effort and prevent global north prioritization.

- Address potential disparities in the development and distribution of dengue solutions, particularly considering its global spread and emergence in Europe and other high income non-endemic regions such as Japan and the United States of America.
- Be an advocate, guarding against expedited solutions which can only be accessed by populations in the Global North, working with procurement bodies and funders such as Gavi, COVAX and the Global Fund which have been set up specifically to address health equity.
- Devise strategies to prioritize equitable access and distribution of dengue prevention and control measures, taking learnings from COVID.
- Dengue cannot be prevented in a vacuum, within advocacy, there is a need to expand the discussion on the social determinants of health by exploring how inequity and inequality in urban areas contribute to the vulnerability of certain populations to dengue and other diseases that are already exacerbated by climate change.
- Policies and programs that address the root causes of health disparity whilst promoting health equity as a core component of urban resilience and dengue prevention.

Spearhead varied interventions to allow affordability for endemic countries.

- Invest in, engage with and advocate for a varied suite of solutions to reducing mosquito populations. When developing medicine and technologies, factor in affordability and access in the R&D process itself to prevent widening the equity gap.

Use technology as a predictive tool to prepare for outbreaks in the medium term and plan building in the longer term.

- Showing building companies, developers, mayors, and city planners how to predict dengue impact on build sites through AI and technology assisted prediction tools to prevent future economic burden.
- Outbreak prediction modelling can be used to prepare health systems and governments in advance of outbreaks and ensure prevention methods are in place on the ground and hospitals are ready to provide care ahead of an outbreak.

7

Advocacy

FOSTER COLLABORATION BETWEEN GOVERNMENTS, MUNICIPALITIES, COMMUNITIES, PUBLIC, PRIVATE AND THE PHILANTHROPIC SECTOR TO DRIVE AWARENESS AND COLLABORATIVE PROBLEM SOLVING.

WORKSHOP INSIGHTS

The rising issue of dengue fever spreading globally provides an opportunity to highlight the impact of climate change on health.

Elevating the issue of dengue fever and other vector-borne diseases at events such as G20, COP or WEF[1] meetings, the UNGA[2] , the WHA[3] or the WHS[4] can help to influence decision making at a local and global level.

"Dengue is not what drives Mayors out of bed in the morning ... so how are we going to raise the profile, how are we going to talk about the issues, how are we going to drive equity around the world?"

Katrina Bruebach, Resilient Cities Network

Engaging public health campaigns serve as a dynamic tool to educate, raise awareness, and counter possible misinformation. Employing social media as a public health conduit not only enhances community engagement but also cultivates a proactive approach in mitigating the spread of dengue, empowering individuals with accurate knowledge to safeguard their health.

"Innovative ideas don't need to come at the expense of things we can do now. We should build on what we already have, making it easier to use technologies already available – like painting walls white to make it easier to see mosquitos at home like in Italy. We must understand the economics and develop economic models to make the case for action."

Simon Bland, GLIDE

[1] World Economic Forum, [2] UN General Assembly
[3] World Health Assembly, [4] World Health Summit

"The G20 in Brazil next year presents an opportunity to put dengue on the climate and health agenda at that convening, to raise jeopardy and launch a strategy to scale."

Tracy Loh, World Mosquito Program

ACTIONS

Spearhead community education and advocacy for climate-resilient dengue solutions.

- Community participation is pivotal to combating dengue and is often a simple and cost-effective solution.
- Given the importance of dengue in the urban environment is only going to increase we should focus on the incentives for positive change at the municipality level – seeking ways of learning, sharing experiences and publishing results.
- Coordinate, focus and amplify global conversations, social media networks and awareness campaigns about dengue by leveraging existing movements such as national and regional advocacy and the World Dengue Day initiative.
- The patient voice is not historically strong or championed within dengue. Where possible, patient and community opinions and experiences should be amplified.

Utilize social media as a vehicle for behavior change.

- Leverage the power of social media to revolutionize public health communication in combating dengue fever and tackling misinformation.
- Harness the expansive reach of social networks through tailored campaigns which disseminate accurate and timely information about dengue prevention measures, symptoms, and treatment options to at-risk communities.
- Use social networks to disseminate accurate and timely information about dengue prevention measures, symptoms and treatment options to at-risk communities.
- Some communities are alerted to dengue outbreaks by their governments - driving people to consider dengue if they get ill and seek treatment or community or home level diagnostic testing (if this can be addressed affordably). These alert mechanisms can encourage the behavior change needed to prevent dengue but these to be used quickly enough to make a difference (within 48 hours of disease onset).

Prioritize dengue and other vector-borne diseases on the global stage.

- Articulate the burden of vector-borne disease at global events in a way that increases the urgency and presents actionable solutions that are integrated with higher priority challenges (like housing).

Build a cross sector collaboration.

- Central to all these ideas is a need for cohesive leadership. Collaboration cannot happen without leadership.
- Collaboration needs to be encouraged among health authorities, city planners, water management departments, and community organizations to develop and implement comprehensive strategies for reducing mosquito breeding sites in urban environments.
- Given the importance of dengue in the urban environment is only going to increase we should focus on the incentives for positive change at the municipality level – seeking ways of learning, sharing experiences and publishing results.

A Roadmap for Change

With the aim to keep momentum and capitalize on the effort from our discussions during the Global Dengue Forum, we're poised to not only envision and discuss but also develop a series of strategic steps, both shorter term and longer term.

These proposed steps are designed to propel our collective action into a dynamic phase of real-world impact and tangible progress

Define Guardrails

- Set a strategic framework that defines the problem, solution and the ask
- Define a clear narrative and positioning in order to galvanize action
- Agree required resources that deliver on the strategic ambition

Establish Workstreams

- Establish clear workplans within each theme
- Identify actions and workplans for engagement and strategy
- Build a timeline of deliverables and schedule meeting dates

Consider Actions, Influence and Impact including through:

- Thought leadership
- Yearly meetings at global milestones
- Development of a toolkit for local government and national leaders
- Provide scalable recommendations for policy action
- Pilot country government engagement
- Create a global platform to track progress

Establish Network of Collaborators

- Reach out to local partners including community leads and governments
- Explore and secure financing avenues
- Finance work within workstreams

Longer Term

Formalize the Collective Action

- Identify group members and leadership structure, including lead advocates within themes of Urbanization, Innovation and Advocacy
- Agree on other organizations to invite to the table

Alignment and Mapping

- Secure commitment from partners and experts on ideas and direction of action for future collaboration
- Define the engagement structure and ways of working
- Understand the work already taking place in dengue prevention from different organizations through mapping
- Map the unmet need and identify which countries are most in need of dengue support mechanisms to enable the group to be informed on potential pilot countries for activity

CHANGE

W · · E

GLOBAL DENGUE FORUM

Mobilizing action:

Momentum against dengue could be unstoppable

This report has shone a light on the insights shared by experts and subsequent proposed actions from the Global Dengue Forum, which is designed to inspire and provoke global change. From innovative urban strategies to advocacy and technological advancements, the seven ideas represent actionable pathways toward confronting dengue fever amidst a changing world.

As we navigate these uncharted waters together as global health experts, academics, the pharmaceutical industry, water and building organizations, epidemiologists and community leaders, this summary heralds our collective journey—a testament to our shared dedication to global health and our unwavering pursuit of solutions in the face of complex challenges.

If the initial burst of inspiration, strategic approach, and willingness to collaborate witnessed during a single day in Dubai at COP28 were to be extended and maintained within a long-term engagement of stakeholders, the momentum against dengue could become unstoppable.

THE VISION FOR A PARTNERSHIP

As a collective deeply dedicated to pioneering new frontiers in global health, we acknowledge the pivotal moment before us. The insights and resolutions drawn from our recent forum resonate profoundly: **tackling dengue fever, alongside other similar health challenges, demands not just commitment** but a cohesive blend of collective actions, with opportunity for **every member of our group playing a pivotal role.**

How will we strategically allocate our resources, time, and expertise to spearhead innovative actions against these health challenges? Moreover, how do we ensure that accountability forms the cornerstone of all our collective efforts? Those are just some of the challenges ahead.

Our roadmap is merely the beginning of an ambitious journey. The efficacy with which we harness the collective expertise and ambition of our group in 2024 and the subsequent years will be pivotal to the fruition of our collective goals. **The collective action needed is a commitment to collaborate for impact and innovation**. Together, we are not just envisioning a shared future; we are actively shaping it, marking a new era of collaboration and transformation in addressing pressing health concerns.

We aspire to **foster a united front** where experts dedicated to dengue, arbovirus, and other mosquito-borne disease initiatives can **collectively amplify their impact** beyond what might be achieved in isolation.

Our discussions pushed us to **explore a model of working** that, while drawing wisdom from past efforts in NTD alliances, proposes a more **fluid and transparent mode of collaboration.** This model envisages designating lead organizations to spearhead specific workstreams, complemented by a shared platform - a database or forum - where all members can regularly contribute updates about new developments and programs within the field.

In this way, we **shift from the traditional, more rigid structures** of vertical alliances. It champions a leaner approach, minimizing hierarchy and bureaucracy to **foster a more dynamic and proactive participation towards mitigating the global impact of dengue and related health challenges.**

Afterword

Bruce Gellin, Senior Vice President and Chief of Global Public Health Strategy, The Rockefeller Foundation

Credit, Freuds

This initiative marks a pivotal beginning in our collective battle against dengue which is more urgent now due to the spread of dengue due to climate change.

By fostering a collaborative spirit, breaking down silos, and engaging stakeholders from diverse backgrounds and different sectors, this “movement” sets the stage for a transformative change in our approach. The impact of climate change on health requires an all hands on deck approach. We are no longer isolated in our efforts; instead, we must work together as a global community, united in our resolve to tackle dengue head-on.

As we navigate the complexities of dengue prevention, treatment, and control, let us remember that our combined efforts hold immense power. Together, we can steer a new, inclusive and collaborative path forward - one that transcends disciplines, borders, and individual interests. Let us continue to work hand in hand, leveraging our collective expertise, to protect communities worldwide from the impact of this relentless disease.

Together, we can turn the tide that is rising due to climate change and create a healthier, safer world for generations to come.

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Image credits

Dengue Fever – Falling Between the Cracks

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