ABOUT WWARN

The public health community needs comprehensive, reliable and timely information to slow the emergence of antimalarial resistance and maintain the efficacy of antimalarial treatments. The WorldWide Antimalarial Resistance Network (WWARN) is a collaborative platform for researchers to assess the evolution, epidemiology and public health impact of drug resistance.

A relatively small increase in malaria drug efficacy could have a major impact by stopping millions of cases of recurrent malaria each year.

WWARN assesses antimalarial drug efficacy by providing policy makers with the evidence needed to plan effective strategies to contain resistance and ensure the most effective use of current and new drugs in the fight to eradicate malaria.

WWARN brings together experts from multiple research disciplines, from across the world. WWARN provides tools, services and training to assure the quality of antimalarial efficacy testing.

“Ensuring that all patients receive optimal antimalarial treatment to support the campaign to eradicate malaria”

THE CHALLENGE OF DRUG RESISTANCE

Despite recent progress in reducing mortality rates, malaria remains a major public health problem. As resistance to artemisinin combination therapies (ACTs) – the recommended treatment against malaria – continues to emerge and spread, maintaining the efficacy of existing drugs is vital.

Drivers of antimalarial resistance:

- Substandard antimalarial medicines
- Use of monotherapies instead of recommended ACTs
- Patients not completing a full course of treatment
- Underdosing of vulnerable patients such as children and pregnant women

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“Only by working together to share knowledge and resources, can we help to better preserve the efficacy of antimalarials in all endemic areas”

OUR WORK
WWARN collaborates with malaria research groups to:
• Provide reliable evidence of antimalarial drug efficacy
• Support quality-assured data collection and drug efficacy assessment of existing antimalarials and those in development
• Overcome the challenges of identifying and analysing early signs of antimalarial resistance
• Integrate data from multiple sources, building a comprehensive picture of resistance drivers and strategies to slow their effects
• Work with neglected and tropical disease research communities to adapt the WWARN data management model

More than 120,000 individual patient records have been contributed to the WWARN data repository so far. This equates to approximately 80 per cent of all artemisinin combination therapy trial data available.

SUPPORTING MALARIA RESEARCHERS
Free, easy-access online tools and services to help researchers contribute to the campaign against resistance

- External Quality Assurance
  Proficiency testing and reference standard programmes help assess the ability of a laboratory to carry out analyses, resolve problems and improve results

- Explorer
  Presents summary data from clinical trials stored in the WWARN data centre

- Molecular Surveyors
  Summarises the prevalence of molecular markers associated with resistance by location and time

- Antimalarial Quality Surveyor
  Summarises published reports of antimalarial medicine quality by location and time

- Parasite Clearance Estimator (PCE) Online
  Provides an accurate and consistent method of parasite clearance rate estimation, the metric for parasite susceptibility to artemisinins

- Literature Review Library
  Comprehensive reference resource to support development of clinical study programmes

- IVART Online
  Removes subjectivity from IC50 calculations used to measure the in vitro drug susceptibility of malaria parasites

- Protocols & Procedures
  Support protocol design, and the collection, analysis, interpretation and dissemination of high quality data e.g. Microscopy Guidelines for malaria researchers

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HOW WWARN RESEARCH IS HELPING TO IMPROVE TREATMENT OUTCOMES

WWARN initiated a series of pooled analyses of individual patients’ data to assess the patient and parasite-related factors associated with clinical failure following treatment with the four main ACTs:

• artemether-lumefantrine (AL)
• artesunate-amodiaquine (ASAQ)
• dihydroartemisinin-piperaquine (DP)
• artesunate-mefloquine (AM)

Although most of these treatments are working well in most regions, our findings highlight many ways to optimise the efficacy of ACTs, especially in vulnerable subpopulations. These include:

• Small children treated with DP were receiving a lower amount of the drug than expected, and these children were much more likely to fail treatment. This evidence supported changes to the World Health Organization’s Guidelines for the treatment of malaria (3rd Edition 2015)

• Malnourished children treated with AL are at a higher risk of treatment failure than those who are well-nourished

• Providing the artemisinin and amodiaquine as a single pill is more effective than treating people with two separate pills

• Patients infected with parasites that carry particular mutations in pfcr1 and pfmdr1 are at higher risk of treatment failure after AL

PLATFORM FOR PARTNERSHIP

Since its creation in 2009, more than 260 institutions have worked in collaboration with WWARN. The network provides an opportunity for researchers to share their experience and knowledge, and receive increased visibility for their research.

Study Groups

WWARN invites scientists to contribute their clinical efficacy data and form a Study Group to collaborate with other data contributors to answer a scientific question. The data platform transforms individual patient or parasite data to a standardised format. Datasets are combined and analysed to answer that question.

Data sharing

WWARN’s unique informatics infrastructure simplifies data sharing, allowing collaborators around the globe to integrate data from different antimalarial studies and disciplines. Combining data across countries and time is the only effective way to track the emergence and spread of antimalarial resistance. This highlights areas where information is fragmented, inaccessible, of poor quality or even missing.

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“WWARN offers a platform for partnership - an opportunity for scientists and researchers to ask and answer important questions using the power of their combined research data”
GET INVOLVED

• Use the wide range of free tools and services
• Share your study and collaborate with colleagues
• Join a Study Group to propose and answer key questions
• Download our publications
• Contact WWARN to connect with colleagues in your region
• Sign up for the WWARN e-newsletter info@wwarn.org
• Follow WWARN on Twitter and Facebook

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