emergencies near their homes. We measured how often EFARs comply with these dispatches and how many arrived on-scene prior to the ambulance.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): 41 EFARs were dispatched via text message to 10 medical emergencies (average 4.1 per incident, min = 1, max = 11); a total of 29 EFARs (22 from text-message, 7 from word of mouth) responded to 8 emergencies (average 2.9 per event, min = 0, max = 7). For every emergency that was responded to, EFARs arrived on-scene prior to the ambulance.

Summary/Conclusion: These early findings highlight that community members, when text messaged, will cease daily activities to assist with medical emergencies. Previous studies suggest that community-based emergency health workers can improve health outcomes in rural and urban environments. We intend to follow-up and assess if text message-based dispatch leads to improved health outcomes for emergency care situations in Western Cape townships.

Local clusters of malaria transmission in the district of Kaya (Burkina Faso)

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Background: Malaria is holo-endemic in Burkina Faso and causes the death of approximately 40,000 individuals every year. Local health authorities have been implementing population interventions such as universal bednet distribution and community case management of malaria in every village. However, recent studies conducted in other countries have revealed the existence of local clusters of malaria transmission and have argued that supplementary interventions should target these clusters. The objective of this study is to detect such clusters of malaria transmission.

Structure/Method/Design: The study area is located near the city of Kaya. We randomly selected 2000 households from the population living within a 15-kilometer radius of Kaya—an equal number of households came from rural and urban areas. Each household was located using GPS and visited once a year during the season of high transmission of malaria (July 2011 & August 2012). During the visits, household surveys were administered and rapid diagnostic tests for malaria were performed on every child under 5 years of age. Moran's indices of spatial autocorrelation were used to define clusters of malaria transmission, known as malarial hot spots (Getis-Ord Gi*).

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): Malaria transmission varied considerably depending on the area (urban vs. rural), on the village and on the year. Malaria prevalence in the urban area reached 13% in 2011 and 7% in 2012; in the rural area, prevalence was of 34% in 2011 and of 18% in 2012. Several clusters of high transmission (hot spots) were identified in rural areas while the cold spots were all located in the urban area. Despite the reduction of malaria transmission observed in 2012, some hot spots persisted. Most of the recurrent hot spots were located in specific environments (areas of lower altitude and/or in proximity to stagnant waters or artisanal dams).

Summary/Conclusion: Local clusters of malaria transmission were identified in the holo-endemic district of Kaya. It is likely that seasonal epidemics stem from these hot spots. Local health authorities should target additional interventions in these hot spots to reduce the transmission of malaria.

Comparison of a portable novel cardiovascular assessment device against echocardiographic assessment in a rural Bangladesh population

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Background: Cardiovascular disease is a common and serious illness that affects millions of people and is the top cause of death worldwide. In Bangladesh, the incidence of cardiovascular disease has been increasing steadily for the past couple of decades. Early detection of subclinical or clinical cardiovascular disease allows for early treatment and increased preventive measures, leading to decreased morbidity and decreased chance of a serious cardiovascular event later in life. Echocardiography is currently the gold standard method for obtaining various cardiac measurements used to diagnose and treat heart disease in rural Bangladesh; however, it is expensive to obtain and maintain, requires highly trained personnel to use, and is a relatively subjective exam. DynaPulse, a highly portable instrument that noninvasively takes cardiovascular measurements, could be a good method of detecting cardiovascular disease in resource-poor settings such as Bangladesh. This study aimed to compare DynaPulse measurements against those taken by echocardiography.

Structure/Method/Design: Cardiovascular data was obtained with both instruments from 145 subjects coming to a primary health care clinic in rural Bangladesh. Echocardiographic measurements were used to generate cardiac output, ejection fraction, and left ventricular outflow tract velocity-time integral, while DynaPulse output included cardiac output, left ventricular contractility, mean arterial pressure, systemic vascular resistance, and brachial artery resistance. Regression analysis was performed comparing DynaPulse data against echocardiography data, adjusting for age, gender, and body mass index.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): Several correlations were found between echocardiography measurements and DynaPulse measurements, including ejection fraction (as measured by echo) and left ventricular contractility ($P = 0.049$), ejection fraction and mean arterial pressure ($P = 0.014$), left ventricular outflow tract velocity-time integral (LVOT VTI) and cardiac output ($P = 0.014$), LVOT VTI and systemic vascular resistance ($P = 0.005$), and LVOT VTI and brachial artery resistance ($P = 0.010$). Many correlations were found between DynaPulse measurements and the demographic variables age and body mass index.

Summary/Conclusion: In conclusion, the results indicate that DynaPulse may be a useful device for clinical assessment of cardiovascular function, as revealed by the strong relationships between many DynaPulse measurements and demographic measurements. In addition, certain DynaPulse measurements may be good predictors of some measurements taken by echocardiography, as indicated by the various correlations between certain measurements taken by the two instruments. Thus, DynaPulse may be considered for use in clinical practice to gauge cardiovascular status and function in resource-poor settings.

Visualizing the effect of needle exchange program scale-up in the Russian Federation: Findings from our web-based modeling tool

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Background: Despite progress made in halting the global HIV epidemic, new infections among injection drug users (IDU) in Eastern Europe and Central Asia are increasing, and accounted for 10% of all new HIV infections globally in 2010. With 1.8 million IDUs, the Russian Federation (RF) alone contributed to 70% of these infections. Despite ample evidence on effectiveness of needle exchange programs (NEP), the RF is not actively promoting their development. Our project aims to assess the potential health and cost benefits of scaling-up of NEPs in the RF using our advanced modeling tool.
Structure/Method/Design: Using standard systematic review methods, we searched and screened studies assessing the direct and indirect effect of NEP on HIV-related outcomes globally. We extracted outcome data from eligible studies, transformed them to standard metric of relative risk reduction (RRR), and calculated summary measures using the random-effects meta-regression model. We developed and calibrated a Markov—state mathematical model to capture the dynamics of the HIV epidemic in the RF and transformed it into our user-friendly, interactive, web-based tool entitled "Global Health Decisions Policy Explorer."
Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): Our meta-analysis revealed that NEP attendance is associated with a 57% (52% to 62%) reduction in needle sharing in IDUs. Using this and other data in our model, we estimate that increasing the coverage of NEPs from 6% to 10% of IDUs in the RF will prevent 11,830 HIV infections and 3369 AIDS-related deaths over the next 20 years for approximately $39 million. Scale-up of programs to reach 25% or 50% of IDUs would avert 70,000 or 164,000 infections, respectively, and 20,000 and 46,000 deaths when compared with the baseline scenario for the cost of $233 million and $557 million.
Summary/Conclusion: Resource allocation and governance needs to rely on sound evidence that is easy to use. Our project suggests that large gains in HIV prevention can be made in the Russian Federation through scale-up of NEPs.

Designing an Institute for Health and Technology: The Amsterdam Living Lab

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Background: In April 2013 the city of Amsterdam launched the Amsterdam Metropolitan Solutions design contest, soliciting designs for a new technical institute that would help Amsterdam to attract and retain international talent in applied technology, contribute to innovation while complementing existing strategic initiatives, develop and market metropolitan solutions to create economic value and improve the quality of living and working in Amsterdam, have a positive impact economically, and ensure sustainable connections regionally and globally. In return, the city offered the unique setting of a "Living Lab," access to its sociodemographic and economic data, linkage to its international networks, and support in acquiring grants and investments.
Structure/Method/Design: The Amsterdam Institute for Global Health and Development (AIGHD), in collaboration with the Duke Global Health Institute (DGHI) and their respective consortium partners (academia, private sector, investors, media, and civil society organizations), proposed establishing the Amsterdam Institute for Health and Technology (AIHT). AIHT is to be a world-class open innovation programme promoting healthy living and improved health services for urban populations globally. As a leading node in a global knowledge network, AIHT will identify, pilot, apply, and evaluate cutting-edge health technologies from around the world. These comprise health informatics, digital/mobile health, devices, point-of-care diagnostics, robotics, and domotics, including innovations with high-potential health impact in resource-constrained settings. Harnessing strategic links with academic, business, and other partners locally and globally, AIHT will facilitate the adoption of novel proven health technologies into urban health ecosystems to improve health and enhance the delivery of affordable, quality care.
Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): The AIHT proposal is anchored in a threefold mission of education and training, scientific discovery and technical innovation, and knowledge translation and valorisation. AIHT was awarded second place in a field of 13 international consortia. Its strong points include its emphasis on creating a health-related Living Lab across Amsterdam based on Learning Heath System principles, proposed MedTech incubator/science park facilities, focus on actual demand for solutions, and the quality and depth of its proposed education and training programmes. Negotiations are close to completion for the initial 3 years of funding.
Summary/Conclusion: In the face of rising health care costs across the globe, urbanisation influencing health worldwide, and the ageing of urban populations, applied innovative technology could offer solutions that would reduce costs while improving quality of life and health. AIHT aims to be a globally recognized knowledge node of technological innovation and its application to wellness promotion, disease prevention, and the delivery of efficient, quality health care services in Amsterdam and worldwide.

Understanding the emerging role of ultrasound in Colombian emergency medicine residency training

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Background: Emergency medicine (EM) is emerging as a specialty in Colombia with five residency programs and a growing presence throughout the country. Many residency programs and emergency departments are beginning to incorporate point-of-care (POC) ultrasound into their education and there is interest nationally in integrating POC ultrasound into a standardized emergency medicine residency curriculum. The objective of the study was to conduct a nationwide survey of Colombian EM residents to gain a better understanding of the current state of POC ultrasound use within EM residencies and to examine specific barriers preventing its expansion.
Structure/Method/Design: We conducted a mixed-methodology survey of all available current EM residents in the five EM residencies in Colombia (three in Bogota and two in Medellin). A quantitative needs-assessment survey was used, which assessed previous ultrasound experience, current use of various applications, desire for