

Charitable Purposes Subcommittee for development grants to support our work and field visit to the West Bank.

Abstract #: 1.008_TEC

Dried blood spots: An evaluation of utility in the field

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Background: Dried blood spots (DBS) offer several advantages over serum samples when resource and environmental conditions are challenging. Many analytes, including antibodies, are stabilized, once dried on filter paper, despite fluctuating temperatures and extended storage time.

Methods: From November 2011 to May 2015 we interviewed and collected a DBS sample from 3318 people, age 0–49 in Tianjin, China. From each participant, we collected five spots on a single, filter paper card. Each of the five spots were evaluated and rated “good” or “bad.” A good spot was one that completely filled the pre-printed circle on the filter paper (≥ 11 mm in diameter), and was deemed large enough for analyte testing. Each card was scored based on the number of good spots. We examined the number of good spots per card by participant age and by year of collection.

Findings: DBS quality data were available for 3316 of the 3318 blood spot cards. Among those, 22.8% were had zero good spots, 5.7% had 1 good spot, 8.6% had 2 good spots, 17.6% had 3 good spots, 21.3% had 4 good spots, and 24.1% had 5 good spots.

When compared to those aged 30–39 years, the mean number of good blood spots (3.15) was significantly lower among those aged <12 months (1.68, $p < .0001$) and aged 1–9 years (2.57, $p < .0001$). Participants aged 20–29 years had the most good spots (3.52, $p < .0001$).

The mean number of good spots improved with training. Compared to 2012, the first full year of data collection, which had a mean of 2.52 good spots per card, 2014 was worse (mean = 2.22, $p = 0.0002$) and 2011 was significantly worse (mean = 1.21, $p < .0001$), but 2013 (mean = 3.98, $p < .0001$), and 2015 (mean = 3.62, $p < .0001$) were better.

Interpretation: While DBS may be easier to collect and transport than serum samples, they may not be as good for young children, especially those under age 1 year. DBS collection requires training and practice to ensure that DBS are large enough for analyte testing. Despite challenges, DBS yielded good results and proved an acceptable alternative to serum samples in a resource limited environment.

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Arizona Sonora Border Projects for Inclusion (ARSOBO), a US-Mexico NGO collaboration, develops a sustainable social business to train, employ and assist individuals with disabilities

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Purpose: ARSOBO’s binational program opened in 2010 with a construction shop in Nogales, Sonora. Individuals with disabilities are trained and employed to construct medical devices they use. Two wheelchair users construct all-terrain wheelchairs. An amputee fabricates limbs for others. Hearing-impaired assist with hearing aid fitting. The workers contribute to the regional economy by buying materials locally. This serves to promote ARSOBO and increase community positive awareness of disabilities.

Structure: Eleven million Mexicans need a wheelchair. Most commercial wheelchairs are not appropriate for individuals living in rural areas where the terrain is rough. Children with developmental disabilities typically need customized wheelchairs adapted to their physical structure. Approximately 786,100 individuals with an amputation live in northern Mexico, most the result of diabetic complications, some from traumatic limb loss. Access to prosthetics is very limited and cost-prohibitive. Approximately 7% of the population is hearing-impaired; most have no hearing aid. ARSOBO has developed over 17 bi-national public-academic and private partnerships including faculty and students from 5 different colleges/departments from the University of Arizona. Makers and recipients of these devices are recruited locally or referred from Sonoran partner organizations.

Outcome: Since early 2011, 225 all terrain wheelchairs have been constructed, one-third customized. Since April 2013, 179 individuals have received a prosthetic limb. Since January 2015, 292 individuals have received hearing aids. A Sonoran company provides ARSOBO a rent-free 4200 square foot building where construction is done and clinics held. The City of Nogales, Sonora gave ARSOBO land where a building will be constructed to carry on this work. In summer 2015 binational interdisciplinary university students conducted a qualitative survey of 35 device recipients.

Going Forward: ARSOBO is committed to make this program a sustainable ‘social business’ engaging local businesses to support the work, relying less on assistance from the American side.

Funding: Support and volunteers come from both sides of the border. Recipients and families pay what they can afford for the medical device. Various donations come from companies in Mexico while grants and cash donations come mainly from the US side.

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The development of a mobile phone based intervention to improve adherence to secondary prevention of coronary heart disease in China

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