**ROI of CHW services**

* A community-based asthma management program: effects on resource utilization and quality of life
  + Mild to severe asthmatic kids were enrolled in the study. CHW were trained in: anatomy and physiology of asthma; symptoms and triggers, severity classifications; asthma medications; peak flow meter, inhaler and spacer use and care; and relaxation and strengthening exercises. CHW collaborated with the rest of healthcare providers to develop intervention plans and made home visits to study participants.
  + During pilot study, CHW intervention decreased hospital visits from 1.5 to 0.25 per person and decreased cost from $735/capita to $181/capita.
  + During the 2000-2001 intervention period, total cost per capita dropped from $310/capita (before CHW intervention) to $129/capita (after intervention)
* Cost-effectiveness analysis of a community health worker intervention for low-income Hispanic adults with diabetes
  + Study participants were low-income Hispanic adults with DM II
  + State certified (through Texas Department of Health and Human Services) CHW provided individualized guidance, one on one education, and counseling to increase self-efficacy of study participants
  + Per participant, the program cost was $1,175,63 during an 18-month period
  + Projected lifetime health outcome were based on changes in A1C using Archimedes model
  + 20 years cost-effectiveness of the program was $33,319 per quality-adjusted life year gained, which is favorable (once it falls below the threshold of $50,000 per QALYs gained)
* The effectiveness of a community health worker outreach program on healthcare utilization of west Baltimore City Medicaid patients with diabetes, with or without hypertension
  + Study participants were African-American Medicaid patients with DM with or without HTN
  + CHW had a minimum training of 60 hrs through University of Maryland in Baltimore. They were trained in topics about diabetes, standardized method for taking blood pressure, and other resources available to the community
  + Outcome was measured in health resource utilization
  + The mean expenditure (based on Medicaid health service reimbursements) for one year after CHW intervention were $8,266, representing a 27% decrease when compared to expenditure prior to the intervention
* The Care Span: Medicaid savings resulted when community health workers matched those with needs to home and community care
  + Study participants were low-income residents in 3 counties who are Medicaid and with physical long disability with unmet long-term care needs
  + 6 trained CHW were used to provide targeted outreach to identified potential study participants. Study participants were referred to Medicaid and provided resources for long-term care options
  + Outcome was measured by on use of Medicaid services: inpatient/outpatient medical services, nursing home services, home/community-based services
  + The difference in Medicaid spending between before and after CHW intervention were compared to similar before-and after changes in matched comparison group from other counties
  + Study participant had an unadjusted increase of 19.3% in annual Medicaid spending over the 3-year study period, compared to 30% increase in comparison group
  + Overall, the program produced a saving of $3.515 millions in Medicaid expenditure over the 3-year study period; the program incurred 896,000 in operation expense. The final return on investment was 2.92 per dollar invested
* Community health workers and Medicaid managed care in New Mexico
  + Study participants were high consumers of health resources (>3 ED visits) in a Medicaid managed care system, specifically the Molina Healthcare of New Mexico
  + CHWs were trained by the university of New Mexico Health science center’s department of family and community medicine. CHW’s goal was to improve access to primary care and to decrease pharmaceutical and hospital-based utilization
  + The cost difference between 6-month prior to 6-moth after CHW intervention were lower across the board. Categories include: ED, inpatient, non-narcotics prescription, and narcotics prescription. Total cost difference was $2,044,465. The cost of the program was $521,343
* The Seattle-King County Healthy Homes Project: a randomized, controlled trial of a community health worker intervention to decrease exposure to indoor asthma triggers
  + Study participants were low-income household with asthmatic kids ages 4-12
  + CHW were used in “healthy home” model, which involves conducting home environmental audits to access for allergen exposure, motivating low-cost actions, exposure reduction, and advocacy for improving housing
  + Comparing 2 groups: 1) high intensity with 7 home visits by CHW and 2) low intensity with 1 home visit with limited education
  + Outcomes were measured on Pediatric Asthma Caregiver Quality of Life Scale, asthma symptoms days, and self-reported urgent health service utilization
  + High intensity group had higher caregiver quality of life, decreased number of symptoms days (difference is not statistically significant), and grater reduction in urgent health service use
  + If the difference in urgent care costs persists for 3-4 years, the high intensity intervention will be cost saving compared to low intensity group. The saving per child will ranging from $972-$1,366 for 3 years or from $1,316 to $1,849 for 4 years
* A cost analysis of a community health worker program in rural Vermont
  + Paper looks like economic evaluation of a CHW program in St. Johnsbury, Vermont
  + The team employs 3 full-time CHWs, one acts as a supervisor, the other two CHWs will conduct outreach and link participants to community services and help them enroll in Vermont’s health insurance program. The primary goal is to stabilize the life conditions of program participants so they can seek routine healthcare and reduce cost to the health system
  + Total 1 year cost of CHW program was $420,650
  + The paper gives a model to estimate the total cost of a CHW program
* Community health workers: part of the solution
  + Massachusetts
    - In 2000, established Massachusetts association of community health workers (MACHW), an organization that does education, research, policy development and advocacy to promote CHW workforce
    - In 2006, the healthcare reform law led the department of public health to conduct study of CHW and provide recommendations for developing CHW workforce
    - In 2007, MACHW was included in the state’s Public Health Council
  + Minnesota
    - In 2005, Community Health Worker Alliance developed both scope of practice and a state-wide curriculum
    - In 2007, CHW is approved for direct hourly reimbursement under Medicaid
    - In 2008, CHW who completed their curriculum is approved for hourly payments who work under the supervision of Medicaid-approved healthcare provider
    - The system allows CHW to become part of care coordination teams, offers job security and addresses state’s underserved population
* Return on investment from employment of community health workers
  + This is more of a summary that mentioned a lot of other study and argues that such detailed study on ROI or cost-effectiveness is not necessary to justify expansions of CHW workforce
  + “For a number of years we have relied heavily on three studies showing savings in total cost of care: a Baltimore diabetes study showing annual savings of more than $2200 per patient, a Hawaii asthma study showing a reduction of 75% in annual asthma-related costs, and a Denver study on a broader range of costs estimating a ROI of 2.28:1”
* The role of community health workers in diabetes: update on current literature
  + Again, this is a review article on CHW, specifically looking at any randomized controlled trials with CHW’s effect on diabetes outcome
  + In the Brown article, the cost of CHW-based program is cost-effective based on the fact that it’s lower than the $50,000 quality-adjusted life years cutoff
* Outcomes and costs of community health worker interventions: a systematic review
  + Another review article trying to find the outcomes and cost of CHW interventions
  + Found 6 studies on cost-effectiveness of CHW; the result was insufficient data for evaluation
    - None of the data reported cost per quality-adjusted life year saved, which would be helpful to compare CHW vs non-CHW intervention
  + Found 30 studies that suggested a low to moderate evidence of CHW increasing appropriate health care utilization
    - 2 studies showed reduced unscheduled medical visits
* Measuring return on investment of outreach by community health workers
  + Denver health (primary health care safety net) employs 12 CHWs for outreach, providing services such as community-based screening and health education and assistance with enrollment in health plans, referrals, system navigation and care management
  + The study looked specifically at the Men’s Health initiative, which provide outreach to poor men to increase healthcare accessibility, affordability, and continuity.
  + Pre and post intervention saving was $206,485, or $22,943/month over the 18 month period
  + Total cost of the CHW program, including salaries and benefit as well as program costs, was $112,129 or $6,299/month over 18month period
    - Due to decreased use of urgent care, behavior health, and inpatient visits and increased use of primary care and medical specialty visits
  + ROI for the CHW is $2.28 for every dollar spent in the mea health initiative CHW