

Evidence of public health impact (Score: 26):

- Much evidence suggested that CHWs practice under supervision,^{3,10,50-52,56} with the IOM recommending using supervised CHWs to address hypertension.¹⁰
- CHW interventions using this component improved health-related outcomes, including disease self-management, chronic disease-related health outcomes, and social outcomes, in community settings, including Baltimore neighborhoods and Southern Arizona border communities, as well as in an emergency department setting. These outcomes were observed for groups experiencing health disparities, including low-income, uninsured, and African American populations.^{21,22,31}
- An intervention using supervised CHWs resulted in a large cost savings.⁴⁸
- Evidence suggested that this component could limit a CHW intervention's reach because it could add barriers to practicing as a CHW, for example, supervision requirements could limit payment through Medicaid.⁵²

Standard Core Curriculum (Category: Best):

This component authorizes the use of a standardized CHW core competency curriculum to promote a common base of professional knowledge among CHWs. We assessed 10 items of related evidence.

Evidence quality (Score: 26):

- Evidence was mainly non-empirical from practice or theory, but also included several research and economic studies published in peer-reviewed literature.

Evidence of public health impact (Score: 28):

- Much evidence suggested using a standardized core competency curriculum to train CHWs.^{1,9,14,50,51,55,56}
- Two studies also found improved health-related outcomes - one in an urban community and one in a county setting for groups experiencing health disparities, including uninsured or Hispanic populations, or both.^{28,33,34}
- One intervention using this component was low cost and 1 was cost-effective.^{28,47}
- Evidence suggested that this component could limit a CHW intervention's reach because standardization could limit the adaptability of the CHW model and its potential to reach diverse populations.^{4,57}

Medicaid (Category: Best):

This component authorizes Medicaid payment for CHW services. We assessed 12 items of related evidence.

Evidence quality (Quality Score: 25):

- Evidence was primarily from practice or theory, although some items were published in peer-reviewed journals.
- There was 1 quasi-experimental research study.

Evidence of public health impact (Impact Score: 22):

- Much evidence suggested the possibility of improvements in health- and equity-related outcomes if Medicaid pays for CHW services.^{1,4,6,9,14,50,51,53,55,56,58}
- A Medicaid managed care intervention using CHWs in a regional setting improved health care access and reduced resource utilization and cost for high consumers of health care.⁴⁶
- Evidence suggested that this component could broaden a CHW intervention's reach because it is expected to help support CHW interventions.⁴

Specialty Certification (Category: Best):

This component authorizes the use of CHW certification to establish standards for providing services related to a specialty area, for example, for the treatment of specific diseases (e.g., the American Heart Association offers standards in blood pressure measurement). We assessed 5 items of related evidence.

Evidence quality (Score: 21):

- Evidence included 3 experimental research studies and 1 quasi-experimental study published in peer-reviewed journals as well as a report from a state health initiative.

Evidence of public health impact (Score: 28):

- The New York State Community Health Worker Initiative suggested using specialty area CHW certification.⁴
- Three studies showed that interventions using this component improved health-related outcomes, including disease self-management and chronic disease-related health outcomes, in urban, clinical, and community settings, which included Baltimore and Seattle neighborhoods. These outcomes were documented for groups experiencing health disparities, including low-income and African American populations.^{21,23,24}
- A CHW intervention using specialty area certification resulted in a large cost savings.⁴⁸

- Evidence suggested that this component could limit a CHW intervention's reach because too many certification requirements could limit the adaptability of the CHW model and its potential to reach diverse populations.^{4,57}

Certification Development (Category: Best):

This component authorizes formal inclusion of CHWs in developing their profession's certification requirements. We assessed 5 items of related evidence.

Evidence quality (Score: 21):

- Evidence included 2 research studies published in peer-reviewed journals as well as 2 reports and 1 policy brief that recommended or described how CHWs help develop their certification requirements in 3 different states (i.e., Washington, D.C.; New York; and Massachusetts).

Evidence of public health impact (Score: 24):

- Three items of evidence suggested that CHWs be included in developing the certification process, which implies the possibility for improvements to health-related outcomes.^{4,54,56}
- One study evaluating an intervention using state-certified CHWs in Texas (where CHWs were included in developing their state certification requirements) found improved chronic disease-related health outcomes for Hispanic Americans in an urban, clinical setting, while another study found cost-effectiveness in a county setting.^{33,34,47}
- Evidence suggested that this component could broaden a CHW intervention's reach because involving CHWs will help ensure that requirements are appropriate and feasible, given the professional standards.⁵⁶

Standard Specialty Curriculum (Category: Promising Quality):

This component authorizes the use of a state standardized, specialty area CHW curriculum, for example, to promote disease-specific knowledge among CHWs (e.g., the Your Heart, Your Life curriculum and its related training developed by the National Heart, Lung, and Blood Institute). We assessed 7 items of related evidence.

Evidence quality (Score: 23):

- Evidence was nearly all non-experimental research studies (with 1 experimental study).

Evidence of public health impact (Score: 17):

- Interventions where CHWs were trained using a standardized, specialty area curriculum improved health-related outcomes, including disease

understanding, self-management, and chronic disease-related health outcomes in clinical as well as community settings, which included border communities, metropolitan areas, and a Hawaiian neighborhood. These outcomes were documented for groups experiencing health disparities, including African American, American Indian, Filipino, and Hispanic populations.^{15,25,26,32,39-41}

- Evidence suggested that this component could limit a CHW intervention's reach because too much standardization could limit the adaptability of the CHW model and its potential to reach diverse populations.^{4,57}

Scope of Practice (Category: Promising Quality):

This component authorizes the use of a defined scope of CHW practice, which could specify the boundaries that separate CHWs from other health professions. We assessed 9 items of related evidence.

Evidence quality (Score: 21):

- Evidence was primarily items from practice or theory that was authored by nonprofit and state organizations, as well as the IOM.

Evidence of public health impact (Score: 12):

- Much evidence suggested defining the CHW scope of practice, which implies the possibility for improvements to health-related outcomes.^{1,3,4,8,9,50,53-55}
- Evidence suggested that this component could limit a CHW intervention's reach because it could limit the scope of services provided.³

Curriculum Development (Category: Promising Impact):

This component authorizes formal inclusion of CHWs in the development of a standardized curriculum for the field. We assessed 4 items of related evidence.

Evidence quality (Score: 20):

- Evidence included 3 research studies published in peer-reviewed journals as well as 1 policy brief.

Evidence of public health impact (Score: 24):

- The policy brief suggested that CHWs be included in developing their standardized curriculum, which implies the possibility for improvements to health-related outcomes.⁵⁶
- Two studies evaluating CHW interventions where CHWs were trained using a standardized curriculum—that CHWs had helped develop—found improved chronic disease-related health outcomes for low-income, uninsured, and Hispanic populations in clinical settings, and 1 study found cost-effectiveness in a county setting.^{32-34,47}

- Evidence suggested that this component could broaden a CHW intervention's reach because engaging CHWs could result in more comprehensive curricula that could be effective in reaching diverse populations.⁵⁶

Private Insurers (Category: Emerging):

This component authorizes private insurers to cover and reimburse for CHW services. We assessed 3 items of related evidence.

Evidence quality (Score: 11):

- Evidence included items derived from practice and theory, which were primarily authored by nonprofit and government organizations.

Evidence of public health impact (Score: 4):

- Evidence suggested that private insurers cover and reimburse CHW services, which implies the possibility for improvements to health-related outcomes.^{1,4,7}
- Evidence suggested that the reach of this component could be broad because it is expected to help support CHW interventions.⁴

Campaign (Category: Emerging):

This component authorizes an educational campaign about CHWs to promote integration of CHWs into the existing health care system. We assessed 3 items of related evidence.

Evidence quality (Score: 7):

- Evidence included items derived from practice and theory, which were primarily authored by nonprofit and government organizations.

Evidence of public health impact (Score: 8):

- Evidence suggested holding an educational campaign about CHWs, which implies the possibility for improvements to health-related outcomes.^{1,4,54}
- Evidence suggested that this component would increase the acceptance of CHWs and policies that support CHWs, which could lead to an increase in the CHW intervention's reach.⁵⁴

Grants (Category: Emerging):

This component authorizes grants and other financial incentives to support the development of the CHW workforce, for example, to support ongoing professional training and the integration of CHWs into medical teams. We assessed 3 items of related evidence.

Evidence quality (Score: 7):

- Evidence included items derived from practice and theory from state organizations and county evaluators.

Evidence of public health impact (Score: 4):

- Evidence suggested grants and other financial incentives to promote the CHW workforce, which implies the possibility for improvements to health-related outcomes.^{4,9,51}
- Evidence suggested that grants and incentives to support CHW workforce development could lead to enhancement of existing CHW interventions and broaden their reach.⁵¹

DISCUSSION

As evidence supporting the role of CHWs has accumulated over time, a strong evidence base has emerged in support of many policy components that could comprise a CHW policy. Table 2 provides our conclusions about the status of the evidence base for each component assessed and next steps for how it can be improved. Authorizing CHWs to provide chronic disease care services is the policy component with the strongest evidence base, though more comprehensive systematic review could inform how this component should be implemented (e.g., evidence could identify effective service delivery strategies or discuss implementation barriers⁵⁹). The other Best components we identified are candidates for experimental study to determine their effects independent from the effects from other CHW policy components or for preliminary systematic review. For example, there are existing state-level CHW certification and training programs that need to be tested experimentally for effectiveness.⁵¹

Finally, the Promising components are well on their way to moving into the Best category (see Figure 1). These components would benefit from further empirical examination (e.g., using randomized experiments, natural experiments, and economic evaluations that employ cost-effectiveness, cost-benefit, or cost-utility analysis). For example, a defined scope of practice is recommended by many experts and several states already use this policy component,^{4,53,54} but it would be helpful to determine what empirical impact scope definition (and alternative scope definitions) have on patient and economic outcomes. In states where CHW policy components have been enacted, policy evaluations could help to generate new evidence that could inform future policy development.

Table 2. Conclusions and next steps for CHW policy component evidence development

Category	Component(s)	Conclusions about evidence basis and next steps
Best	<ul style="list-style-type: none"> Chronic Care 	<ul style="list-style-type: none"> This component has been systematically reviewed for its effect on diabetes- and hypertension-related outcomes.^{19,30} It has the strongest evidence basis among all the CHW policy components assessed, achieving the highest possible quality and impact scores, and it seems to have much support among experts. More comprehensive systematic reviews (e.g., by the Community Guide) will help to confirm its effects as well as to identify barriers and facilitators to its implementation.
	<ul style="list-style-type: none"> Team-based Care Core Certification Supervision Standard Core Curriculum Medicaid Specialty Certification Certification Development 	<ul style="list-style-type: none"> These components have been part of CHW interventions that improved health-, equity-, and efficiency-related outcomes and there is also expert opinion to support them. They could next be tested independently in experimental studies or included in systematic reviews.
Promising Quality	<ul style="list-style-type: none"> Standard Specialty Curriculum 	<ul style="list-style-type: none"> This component has been part of several CHW interventions that improved health- and equity-related outcomes, but the size of public health impact needs to be measured. Additionally, evidence on this component's efficiency impacts, such as relative cost and economic outcomes, is needed. More expert opinion could also contribute to its evidence basis.
	<ul style="list-style-type: none"> Scope of Practice 	<ul style="list-style-type: none"> Conversely, this component has been widely recommended by experts but has not been part of CHW interventions studied empirically. It needs to be included in future empirical CHW studies in order to approximate its health, equity, and efficiency impacts.
Promising Impact	<ul style="list-style-type: none"> Curriculum Development 	<ul style="list-style-type: none"> This component is very close to becoming a Best component and only needs a little more evidence to replicate positive health, equity, and efficiency findings and/or it needs more supporting expert opinion.
Emerging	<ul style="list-style-type: none"> Private Insurers Campaign Grants 	<ul style="list-style-type: none"> These components are supported by several recommendations from experts, including states that are pioneering CHW policy.^{4,51,54} They should be included in future empirical CHW studies (e.g., policy evaluations) to measure their health, equity, and efficiency impacts. More supporting expert opinion is also needed.

The results of this assessment are subject to the limitations of the QuIC method, with the most important limitations being that (1) much of the evidence reviewed here was not from the study of CHW policy but instead from the study of CHW programs and (2) most of the policy components' individual effects have not been studied independently from the CHW interventions of which they were a part. These limitations derive from the fact that CHW policy has fewer applications and less time available for study. Empirical health and economic studies of enacted state CHW policy components are still greatly needed. Nevertheless, our report succeeds in providing a recent snapshot of the best available evidence bases for components of CHW policy.

Evidence-based public health policy can improve population health but uptake of evidence-based policy needs to increase to realize this potential.⁶⁰ This report's findings can be used by researchers, evaluators, and practitioners to inform the development of evidence-based policy options that use CHWs to prevent and control chronic disease. The continued use and study of CHW policy components will result in improved evidence, policy, and outcomes.

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APPENDIX

Overview

This Appendix provides supplemental documentation for the CHW policy intervention and components assessed, including definitions and search terms, inclusion/exclusion criteria, and inter-rater reliability.

Definitions & Search Terms

Evidence and conversations with subject matter experts were used to develop definitions for the policy intervention and policy components assessed. These definitions guided the collection, classification, and assessment of evidence. Search terms identified using the definitions were used to collect evidence from PubMed, Google, and subject matter experts at the Centers for Disease Control and Prevention. Evidence was first identified for the CHW policy intervention and then component-specific search terms (and variations of these search terms) were used to classify this evidence to policy components. Table 3 describes the CHW policy intervention, component definitions, and search terms.

Table 3. CHW policy intervention, component definitions, and search terms

Intervention/ component	Definition	Search terms
CHW Policy	<p>Any policy (e.g., law) that supports the role of the CHW. Specifically, a CHW is^{1,19}</p> <ul style="list-style-type: none"> • A frontline public health worker who carries out functions related to healthcare delivery, including education and the provision of direct services, such as blood pressure monitoring. • Is a member of the community served. • Is trained as part of the intervention. • Has no previous formal paraprofessional or professional designation. 	<p>"community health worker," "lay health worker," "promotore," "promotora," "community health advocate," "lay health educator," "community health representative," "peer health promoter," "community health advisor," "patient navigator," "lay health advisor," "neighborhood health advisor," "community care coordinator," "community health educator," "community health promoter," "case work aide," "community connector," "community health outreach worker," "family support worker," "outreach specialist," "peer educator," "peer support worker," "public health aide," "environmental health aide," AND/OR "lead abatement education specialist."</p>
Chronic Care	<p>Authorizes CHWs to provide services, including blood pressure screening and education to help prevent and control chronic diseases, such as hypertension and diabetes.</p>	<p>"chronic disease," "asthma," "hypertension," "diabetes," AND/OR "cancer"</p>
Team-based Care	<p>Authorizes the inclusion of CHWs in multidisciplinary health care teams.</p>	<p>"team"</p>
Core Certification	<p>Authorizes the use of CHW core competency certification to establish professional standards for the field.</p>	<p>"core," "competency," "certification," AND/OR "credentialing"</p>
Supervision	<p>This policy component authorizes CHWs to practice under the supervision of a health care professional, such as a nurse practitioner or a physician.</p>	<p>"supervision"</p>
Standard Core Curriculum	<p>Authorizes the use of a standardized CHW core curriculum to promote a common base of professional knowledge among CHWs.</p>	<p>"core" AND/OR "curriculum"</p>
Medicaid	<p>Authorizes Medicaid payment for CHW services.</p>	<p>"Medicaid"</p>
Specialty Certification	<p>Authorizes the use of CHW certification to establish standards for providing services related to a specialty area, for example, for treatment of specific diseases.</p>	<p>"certification," "asthma," "hypertension," "diabetes," AND/OR "cancer"</p>
Certification Development	<p>Authorizes formal inclusion of CHWs in developing their profession's certification requirements.</p>	<p>"certification"</p>
Standard Specialty Curriculum	<p>Authorizes the use of a standardized, specialty area CHW curriculum, for example, to promote disease-specific knowledge among CHWs (e.g., the Your Heart, Your Life curriculum and its related training developed by the National Heart, Lung, and Blood Institute).</p>	<p>"curriculum," "asthma," "hypertension," "diabetes," AND/OR "cancer"</p>
Scope of Practice	<p>Authorizes the use of a defined scope of CHW practice, which could specify the boundaries that separate CHWs from other health professions.</p>	<p>"scope of practice"</p>
Curriculum Development	<p>Authorizes formal inclusion of CHWs in the development of a standardized curriculum for the field.</p>	<p>"curriculum"</p>
Private Insurers	<p>Authorizes private insurers to cover and reimburse for CHW services.</p>	<p>"private" AND/OR "insurance"</p>
Campaign	<p>Authorizes an educational campaign about CHWs to promote integration of CHWs into the existing health care system.</p>	<p>"education" AND/OR "campaign"</p>
Grants	<p>Authorizes grants and other financial incentives to support the development of the CHW workforce, for example, ongoing professional training and the integration of CHWs into medical teams.</p>	<p>"grants," "incentives," AND/OR "workforce"</p>

Inclusion & Exclusion Criteria

Evidence inclusion and exclusion criteria were developed to ensure a sufficient level of comparability across CHW interventions in the evidence.

Inclusion criteria:

- Evidence in English was included.
- Evidence from the developed world was included. All of the criteria defining the CHW intervention (Table 1) had to be met for an empirical study to be included.
- More general, non-empirical evidence was assumed applicable, unless otherwise stated, and included.
- Empirical evidence examining the impact of the CHW intervention independent from any broader intervention impact was included.
- Evidence about the CHW intervention's impact on chronic disease-related outcomes was included.
- Evidence about the CHW intervention's impact on healthcare access and utilization was included because these outcomes are expected to affect chronic disease-related outcomes.
- Evidence about impact or implied impact was included.

Exclusion criteria:

- Evidence from the developing world was excluded because the CHW intervention is expected to be substantially different in these settings.
- Evidence where the impact from the CHW intervention could not be differentiated from the impact of a broader intervention was excluded.
- Evidence about the CHW intervention's impact on infectious diseases was excluded because these interventions are expected to use a different protocol (e.g., for treating tuberculosis), which could interact differently with the component(s) being assessed.
- Evidence only about implementation (e.g., that discussed the specific details of the CHW certification process) was excluded.

Inter-Rater Reliability

We assessed inter-rater reliability (IRR) to determine how similarly the raters interpreted the evidence. We used an Intra-class Correlation Coefficient (ICC) to assess IRR of the quality and impact assessments, which are the main two parts of the QuIC method. The ICC's for the quality and impact assessments across the 14 CHW policy components were both excellent (ICC= 0.998 and ICC= 0.990, respectively). High reliability in these assessments was likely due to the fact that many of the CHW components and much of the evidence were included in multiple pilots to test different iterations of the QuIC method as it was developed, so the raters were very familiar with each item of evidence, having had multiple previous discussions.

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