Chapter 3: Results

Literature Search and Abstract Review Process

Results from the search and the abstract review process were maintained in a database developed in ProCite. A summary of the results of the search and review processes is provided in Figure 2.

Of the 4,389 citations retrieved by the search methods, 3,710 were uniquely identified, that is, not previously included in the Minority Health Citations Database. We reviewed 3,703 of these citations at the abstract review level. We could not determine eligibility for seven articles that we were unable to retrieve.[21-27]

Of the 3,703 citations reviewed, we identified 288 (8 percent) as eligible for full article review. Reviewers did not need to agree on what exclusion criterion applied at the abstract level. The most frequent reason for exclusion was that the article was not relevant to minority health (used by one or both reviewers to delete 1,873 citations) and that the article did not describe an intervention (1,655 citations). Reviewers agreed on the reason for 1,876 of the 3,415 citations deleted (55 percent). For these articles, the same criteria were the most frequently applied: not relevant to minority health (806 citations, 43 percent) and no intervention (670 citations, 36 percent).

Article Review Process

From the abstract review process, 288 citations were identified for inclusion in the article review phase. At the article review level, 197 articles (68 percent) were excluded. The most frequent reasons for exclusion were no evaluation of an intervention (23 percent), not relevant to minority health (22 percent), and not targeted to healthcare provider or organization (16 percent). A listing of the excluded studies, with each article labeled with the reason for exclusion, is included in this report.

Of the 91 included articles, Question 1 was addressed by 27 articles and Question 2 was addressed by 64 articles. One article was identified as addressing strategies to address disparities (Question 1a) and one article was identified as addressing the costs of strategies shown to improve healthcare quality in minority populations (Question 1b). Of the articles addressing Question 2, six articles addressed the costs of the strategies to improve cultural competence (Question 2a). Three articles were identified that included interventions targeted to both providers and organizations, and each of these addressed Question 1.

Description of the Literature

The identified literature addressing strategies to improve healthcare quality in minority populations was heterogeneous. The articles were published in a variety of nursing and medical publications. There were 144 different journals represented by the 288 articles eligible for

review. The *Journal of Nursing Education* (16 articles), *Academic Medicine* (13 articles), and *Journal of Transcultural Nursing* (12 articles) had the highest proportion of eligible articles.

As shown in Figure 3, starting around 1992, the number of publications addressing healthcare quality in minority populations greatly increased. Thirty-three percent (96 articles) of the eligible articles were published after 2000.

Question 1: Effectiveness of healthcare quality improvement strategies for racial/ethnic minorities

Overview of Reviewed Studies

Of the 27 studies eligible for review, only three studies were published before 1990,[28-30] 20 were published between 1990 and 1999,[31-50] and four were published after 2000[51-54] (see Figure 4). All studies were randomized controlled trials (n=20) or concurrent controlled trials (n=7) (see Evidence Table 1). Despite this, the methodology employed by the studies varied widely, making synthesis and presentation of the evidence difficult. Some studies examined the same providers or patients across intervention groups whereas other studies employed a crossover design. The method of allocation also varied; the intervention assignment was made at the patient level (n=7), at the patient and provider level (n=6), at the provider level (n=6), at the provider and clinic/center level (n=2), and at the clinic/center level (n=6).

The majority of articles was in the area of prevention: general prevention (which included studies on cancer screening, immunization, etc.) (n=3), cancer screening only (n=10), tobacco cessation (n=2), cholesterol lowering (n=1), and prevention in children/adolescents (n=3). There were three studies published in the area of mental health (either depression or alcohol abuse) and one each in the area of chronic renal disease, asthma, acute respiratory tract infections, emergency medical systems, and advance directives (see Figure 5). From the perspective of the framework proposed by the Institute of Medicine,[9] there were 18 studies in the area of staying healthy, four in the area of getting better, one in the area of living with illness, one that dealt with coping at the end of life, and three that were in more than one category. In terms of the dimensions of quality,[9] the majority of studies addressed effectiveness (n=24), although there were some that addressed timeliness (n=10), safety (n=2), and patient-centeredness (n=5).

Almost all studies were targeted at physicians: either at physicians only (n=17) or at physicians and mid-level providers (nurses, nurse practitioners, and/or physician assistants) (n=8). Two studies were not targeted at physicians: one was directed solely at nurses and medical assistants and the other was aimed at emergency medical personnel. The specialty of the targeted physicians was most often internal medicine (n=7), but there were also general primary care (n=3), pediatrics (n=3), family medicine (n=2), adolescent medicine (n=1), and one or more of the above (n=9). The interventions targeted practicing professionals (n=15), professionals in training (n=6), or both (n=6). Most interventions occurred in the outpatient setting, either a hospital outpatient center (n=14), a community health center (n=4), a group practice (n=2), or in one or more of the above (n=6). One intervention took place in the community.

The racial/ethnic background of the patients in these 27 articles is shown in Figure 6. Most studies had more than 50 percent African American patients (n=19),[28,29,31-36,38,40,42,44-47,49-51,54]

only two had patient populations that were specified as more than 50 percent Hispanic.[37,39] and none had more than 50 percent Asian/Pacific Islander patients or more than 50 percent American Indian/Alaska Native patients. The remaining six studies had mixed groups (but no more than 50 percent in any one racial/ethnic category).[30,41,43,48,52,53] The mean age of patients was younger than 20 years in one study, between 20 and 39 years in two studies, between 40 and 59 years in seven studies, and over 60 years in five studies. The mean age was not specified in 12 studies.

All studies had a provider intervention, and most studies used more than one provider intervention method (see Evidence Table 2). Overall, the most common methods used were provider education (n=17) and tracking/reminder systems (n=15); a few studies used standing orders/algorithms (n=4), audit and feedback (n=1), and reward incentives (n=1). However, in terms of the *main* intervention method, the primary intervention was a tracking/reminder system in ten studies, multifaceted interventions in nine studies, provider education in two studies, bypassing the physician using nurse/nurse practitioners in two studies, use of a structured patient questionnaire in one study, use of remote simultaneous translation in one study, use of subspecialty consultation in one study, and use of defibrillators on emergency medical vehicles in one study. Approximately half (n=14) of the studies had a patient intervention component, although these studies varied in whether the patient intervention was provided in addition to the provider intervention or compared to the provider intervention. The intervention was intended specifically for racial/ethnic minorities in only two studies [37 53].

The most common outcomes (summarized in Figure 7 and Table 3 and detailed in Evidence Table 3) were related to healthcare process: use of services (7 studies, 13 outcomes), appropriateness of care (18 studies, 43 outcomes), quality of providers (9 studies, 30 outcomes), patient adherence (4 studies, 9 outcomes), and efficacy of treatment (1 study, 1 outcome). Patient health status (7 studies, 21 outcomes), and patient satisfaction (3 studies, 3 outcomes) were also measured. Most authors reported that their intervention resulted in overall improvement (n=13) or partial/mixed improvement (n=10), but a few reported that their intervention resulted in no improvement (n=4).

Quality of Reviewed Studies

The articles were rated in terms of quality in each of five areas or domains: 1) representativeness, 2) potential for bias/confounding, 3) intervention description, 4) outcome assessment, and 5) analysis. Selected aspects of quality are summarized in Table 1. Details of the quality assessment for individual studies are found in Evidence Table 1.

The studies were fairly well described in terms of representativeness (20 of 27 clearly described healthcare providers and setting) and intervention description (24 of 27 described the intervention sufficiently to ensure replication). In terms of bias and confounding, although there were 20 randomized controlled trials, the randomization was considered adequate (in that investigators could not predict assignment) in only 11 studies. Also, although there were seven concurrent controlled trials, there was one study in which the comparison group was considered inadequate (dissimilar).

The studies were not as well designed in terms of their outcome assessment and analysis. Although all studies used objective methods to evaluate outcomes, only nine of 27 studies had

masked outcome assessment, and 13 of 27 studies performed a pre- and a post-intervention evaluation. Approximately half (15 of 27) reported the numbers for and reasons for non-inclusion in the study analysis, and almost all (21 of 27) performed a complete statistical analysis (including the magnitude of difference between groups, an index of variability, and a test statistic).

Results of Reviewed Studies

Twenty-seven articles qualified for our review. The results of these articles are organized by clinical area and by type of intervention. Results are also summarized in Tables 3 and 4 and detailed in Evidence Table 3. The overall summary columns in Evidence Table 3 are presented for both comparisons between intervention arms and comparisons within intervention arms (such as when there was a pre- and a post-intervention assessment), as some studies presented one but not the other, whereas other studies presented both comparisons. For this purpose, "significant improvement" refers to outcomes that showed a statistically better effect, "improvement" refers to outcomes which seemed to have a trend (not statistically significant) towards a better effect, "no improvement" refers to outcomes that were not improved, "negative effect" refers to outcomes that were worse after the intervention, and "not available" refers to outcomes for which no comparison was made.

Results for Question 1 by clinical area

Prevention in Adults

General prevention. Three studies evaluated the impact of quality improvement in the area of general prevention; two primarily used a tracking/reminder system,[28,29] and one primarily used provider education and "prevention prescription forms".[36] All studies demonstrated improvements in healthcare processes, such as likelihood of physicians applying preventive care to eligible patients[28,29] and a variety of specific physician counseling behaviors.[36] Only one study[28] attempted to measure patient outcomes, and it failed to show improvements in any physiologic measures such as blood pressure, serum glucose, and serum potassium.

Cancer screening. Ten studies evaluated the impact of quality improvement in the area of cancer screening,[30,31,34,38,40,42,44,47,48,54] and each of these used a unique combination of provider and patient methods in the intervention and control arms of the study. Most (n=8) used some form of a tracking/reminder system, and two studies used medical assistants or nurse practitioners to offer screening directly to patients.[31,42] All of these studies measured the impact of the interventions on the healthcare process, and all studies found some sort of improvement in cancer screening rates (appropriateness of care) or provider counseling behavior (quality of providers) for some of their outcomes. None of the studies evaluated the impact of quality improvement on patient outcomes.

Tobacco cessation. Two studies evaluated the impact of quality improvement in the area of tobacco cessation; one utilized a tracking/reminder system only,[49] and one used a provider education and reward system.[46] Both interventions improved provider counseling behavior, but the one study that evaluated patient adherence found no effect of the intervention on patient quit rates.[46]

Cholesterol. Only one study evaluated the impact of quality improvement in the area of hypercholesterolemia.[43] The intervention in the study involved provider education, an intensive tracking/reminder system, and patient education. Although the study did not demonstrate any improvement in appropriateness of care, there was a significant improvement in patient adherence to diet therapy and in cholesterol levels for patients in the intervention group.[43]

Prevention in Children

Injury prevention. One study evaluated the impact of quality improvement in the area of injury prevention in children.[51] This study compared the effects of a minimal provider education program with an enhanced provider education program and found that patients of the enhanced intervention providers received more provider injury prevention counseling and were more satisfied with the injury prevention information provided to them than patients of minimal intervention providers.[51] However, there were no differences in parents' knowledge of injury prevention or in their injury prevention practices between the two groups.[51]

Well-baby care. One study evaluated the relative impact of two different interpretative systems for non-English-speaking mothers during well-baby care visits.[37] The two interpretative systems were remote simultaneous (in which the interpreter translates simultaneously with the speaker but is not in the exam room) and proximal consecutive (in which the interpreter is in the exam room, waits for each person to complete a thought, and then translates the completed thought). The study found that both patients and physicians preferred the remote simultaneous translation and that it was associated with fewer misinterpretations and more complete information.[37]

Health behavior screening. Only one study evaluated the impact of quality improvement in the area of health-risk-behavior screening in adolescents.[35] The study compared the effects of a minimal provider education program with provision of a patient-completed standardized health-behavior-screening instrument to providers. The study found that providers who received the patient-completed screening instrument spent more time in health behavior counseling versus assessment and had higher agreement with psychiatrist ratings in assessment of patients at risk.[35] There were no differences in patient satisfaction for either group of patients.

Mental Health

Depression. Two studies evaluated the impact of quality improvement in the area of depression: one that used an intensive program of provider education, depression protocols, and increased provider visits with depressed patients compared with a minimal provider education program[33] and one that combined a provider education program with an intensive patient intervention for comparison with a minimal provider education program.[53] Both studies found an improvement in healthcare processes (appropriateness of depression care) for depressed minority patients.[33,53] In terms of health outcomes, the results were mixed; one study found that depression in both the intervention and control groups improved,[33] and the other study found that depression improved more for the intervention patients than for the control patients.[53]

Alcohol. One study addressed quality improvement in the area of alcohol abuse.[39] This study evaluated the relative and combined impact of a physician education and patient psychoeducation quality improvement program compared with no intervention, and it found addiction severity decreased over time for all groups (including the no intervention group) and

physiologic measures of health worsened for all groups.[39]

Other Clinical Areas

Asthma. One study evaluated the impact of a minimal quality improvement intervention compared with an intensive quality improvement intervention (including provider education, provision or review of practice guidelines, and consultation with expert-physicians) in the care of asthma for children in public health clinics.[41] The study demonstrated improvements in continuity of care and appropriateness of asthma care for patients in intervention clinics compared with controls.

Chronic renal disease. One study evaluated the impact of a single nephrology consultation for patients with chronic renal insufficiency compared with usual care by a primary care physician.[45] The study found that intervention patients had more visits to ophthalmologists, but had no improvements in health outcomes.

Acute respiratory tract infections. One study evaluated the impact of a provider education/minimal patient education intervention with a provider education/intensive patient education intervention, both aimed at decreasing antibiotic prescription rates for acute upper respiratory tract infections.[52] The study found that both interventions were effective in decreasing unnecessary antibiotic prescriptions without differences between groups

Emergency systems. One study evaluated the effect of providing automated external defibrillators on emergency medical equipment (and training firefighters in their use) compared with standard emergency care (which involved cardiopulmonary resuscitation without defibrillation).[32] That study found no differences in health outcomes between the two groups of patients.

Completion of advance directives. One study used a physician reminder system to encourage physicians to discuss advance directives with patients.[50] The study found that patients of physicians who had been reminded were more likely to be counseled and to complete advance directives.[50]

Results for Question 1 by type of intervention

Each study used a unique combination of intervention methods in a variety of settings and patient populations. However, for the purpose of synthesis, we have identified the *main* intervention method. It should be noted that the categorization of the main intervention method is a simplification of what was often a complex intervention strategy. Details on the specific study intervention methods are found in Evidence Table 2.

Tracking/reminder systems: Ten studies used tracking and/or reminder systems to improve quality of care. Of these, two were in adult general prevention,[28 29] six were in adult cancer screening,[29,34,38,40,44,54] one in tobacco cessation,[49] and one was in end-of-life care (completion of advance directives).[50] All ten studies demonstrated positive outcomes, primarily in the appropriateness of care (such as provision of preventive care, tobacco cessation counseling, or advance directive counseling) category. Overall, there is excellent evidence supporting the use of tracking/reminder systems aimed at providers of racial/ethnic minority patients (Evidence Grade A).

Multifaceted interventions: Nine studies used an intervention that we characterize as multifaceted, meaning that there two or more (usually more) main intervention methods.[33,39,43,46,47,5341,48,52] Two of these interventions were in adult cancer screening,[47,48] one in

tobacco cessation,[46] one in cholesterol reduction,[43] three in mental health,[33,39,53] one in acute upper respiratory tract infections,[52] and one in asthma.[41] Outcomes of these studies are mixed, with most studies showing improvements in one or two (but not all) outcomes measured. Overall, there is fair evidence supporting the use of multifaceted interventions aimed at providers of racial/ethnic minority patients (Evidence Grade C).

Bypass the physician: Two studies (both in adult cancer screening) bypassed the physician and had either a nurse or a nurse practitioner offer screening directly to patients, and both studies demonstrated improvements in the provision of preventive services to patients.[31,42] Overall, there is fair evidence supporting the use of bypassing the providers of racial/ethnic minority patients to offer standardized services directly to patients (Evidence Grade C).

Provider education: Two studies primarily used provider education as the main intervention strategy, one in the area of adult general prevention[36] and one in prevention of injuries in children.[51] Both studies found improvements in provider counseling behaviors,[36,51] but one measured and did not find any positive effect of the intervention on parental knowledge of injury prevention (the only outcome categorized as efficacy of treatment) or parental adherence to provider advice [51]. Overall, there is fair evidence supporting the use of provider education aimed at providers of racial/ethnic minority patients (Evidence Grade C).

Use of Safe Times Questionnaire (STQ): One study (in the area of prevention for children) used a structured questionnaire to assess adolescent health behaviors and demonstrated a positive impact on provider counseling behaviors.[35] Overall, there is poor evidence supporting the use of structured questionnaires for racial/ethnic minority patients (Evidence Grade D).

Use of Remote Simultaneous Translation (RST): One study compared the accuracy of translation and quality of patient-physician communication by using remote simultaneous and proximate consecutive interpretation and found fewer translation errors and enhanced patient and physician satisfaction by using the RST method.[37] Overall, there is poor evidence supporting the use of remote simultaneous translation for racial/ethnic minority patients (Evidence Grade D).

Use of specialty consultation: One study evaluated the use of nephrology consults for patients with chronic kidney disease and found no effect on healthcare process or patient outcomes.[45] Overall, there is poor evidence supporting the use of specialty consults aimed at providers of racial/ethnic minority patients (Evidence Grade D).

Use of defibrillators on emergency medical services: One study evaluated the use of defibrillators on emergency medical services and found no effect on patient outcomes.[32] Overall, there is poor evidence supporting the use of defibrillators on emergency medical services (Evidence Grade D).

Results for Question 1a: Strategies to Reduce Disparities

Only one study specifically addressed the question of whether an intervention could reduce disparities in healthcare quality between ethnic minority and white persons.[53] The study, which evaluated the impact of two different culturally tailored interventions to improve the quality of depression care compared with a control group that received no intervention, had mixed results. There was no differential effect of the interventions on healthcare process for white versus ethnic minority patients; all patients (African American, Latino, and white) in the interventions groups were more likely than patients in the control group to receive appropriate therapy. However, there was a mixed effect on health outcomes: there were improvements for

African American and Latino patients in the rate of depression compared to controls (with no improvement for white patients), but there were no improvements for African American and Latino patients in the intervention groups in employment rates compared with controls (with improvement for white patients). Overall, there is poor evidence to determine which interventions might reduce disparities between racial/ethnic minority patients and majority patients (Evidence Grade D).

Results for Question 1b: Costs of Quality Improvement for Racial/Ethnic Minorities

Only one study reported on the costs of an intervention aimed at improving the quality of healthcare for racial/ethnic minority persons.[45] This study, which provided case management and nephrology consultation for patients with chronic renal insufficiency, estimated that it cost a minimum US $89,355 yearly in 1998 (or $484 per intervention patient), but it found no health benefits to participants. Overall, there is poor evidence to determine the cost of strategies to improve the quality of care for racial/ethnic minorities (Evidence Grade D).

Summary of Evidence

Strategies to improve the quality of care for racial/ethnic minority patients have been implemented in a variety of clinical areas by various methods. Almost all the interventions have occurred in the primary care setting, and most have focused on the provision of preventive services. There is excellent evidence that these interventions have improved the quality of providers (Evidence Grade A), good evidence that these interventions have improved appropriateness of care (Evidence Grade B), and fair evidence that these interventions have positively affected patient utilization, adherence, satisfaction, or health status (Evidence Grade C).

In terms of intervention methods, there is excellent evidence that provider tracking/reminder systems are effective in improving the quality of care for racial/ethnic minority patients (Evidence Grade A), fair evidence that multifaceted interventions, provider education interventions, and interventions which bypass the physician to offer screening services to racial/ethnic minority patients can improve quality of care (Evidence Grade C), and insufficient evidence for the use of any other of the studied interventions (Evidence Grade D).

There is poor evidence to determine which strategies are most effective in reducing disparities between minority and white populations (Evidence Grade D). The only study that was specifically designed to do this had mixed results, with improvements in only one of the two outcomes assessed.[53]

There is poor evidence to determine the costs of strategies to improve care and reduce disparities for minority populations (Evidence Grade D).

Question 2: Effectiveness of cultural competence training

Overview of Reviewed Studies

A total of 64 articles addressed strategies to improve the cultural competence of healthcare providers or organizations. The number of articles published has increased

substantially over the last decade. Of the 64 total articles, five were published between 1980 and 1989,[55-59] 30 between 1990 and 1999,[60-89] and 29 between 2000 and 2003[90-118] (see Figure 8). Most of the articles described interventions that took place in the United States (n=52). The remainder described interventions in Australia (n=6), the United Kingdom (n=3), Canada (n=2), or New Zealand (n=1) (see Evidence Table 4).

Of the 64 articles that qualified for our review, only two were randomized controlled trials, eight were concurrent controlled trials, and four had an external (non-concurrent) control group. Most studies were designed without a comparison group; these had either a post-intervention evaluation only (n=25), a pre- and a post-intervention evaluation (n=20), or a qualitative evaluation (n=5). Most of the interventions described in the articles targeted nurses (n=32) or physicians (n=19) (see Figure 9). Most interventions targeted healthcare providers who were in their pre-professional training (n=38) or who were practicing professionals (n=17) (see Figure 10).

The content of the curricular interventions varied across the 64 studies. Using a previously developed framework to categorize cultural competence curricular content,[119] we found that most interventions focused on specific cultural content (n=45), general concepts of culture (n=43), language (n=15), and patient-provider interaction (n=13). A few articles describing interventions focused on healthcare access (n=8), racism (n=3), socioeconomic status (n=2), and gender (n=1). In terms of the specific minority groups that were the focus of the interventions, e 20 studies mentioned Hispanic persons; 19 African Americans; 16 Asians/Pacific Islanders; and five, American Indians.

Most interventions used more than one training method, and no two studies used exactly the same methods. The most common training methods were group discussion (n=29), lectures (n=29), case scenarios (n=20), small group work (n=18), clinical experiences (n=17), cultural immersion (n=17), readings (n=16), role play (n=14), presentations by members of another culture (n=14), and audio/visual materials (n=14). Less common training methods were interviews of members of another culture (n=10), practice exercises (n=7), literature (e.g., poems, stories) (n=5), role play/modeling (n=5), language lessons (n=4), self-study (n=3), self-reflection/awareness (n=3), standardized patients (n=2), problem-based learning (n=1), and brainstorming (n=1).

Most articles did not specify the total contact time that the targeted learners spent in training (n=32). In those that did specify learner contact time, the majority of interventions were eight hours or less (n=12), but some were between one and five days (n=10) or longer than one week (n=10). In terms of timing of the evaluations, 13 evaluations were completed less than one day after the end of the intervention (immediate post-test), four were completed 1 to 30 days after, six were completed between one and three months after, six between four and 12 months after, five more than one year after, six had multiple evaluation time points, and 24 articles did not specify when the evaluation of the intervention was completed.

Most studies used more than one method for evaluation; the most common methods were provider self-assessment forms (used in 33 studies), participant ratings of the curriculum (n=19 studies), written exams (n=19 studies), individual provider interviews (n=6 studies), or patient ratings (n=5 studies). Less common methods of evaluation were essays (n=5 studies), group interviews (n=5 studies), direct provider observation (n=3 studies), and performance audits (n=1 study). Only four articles attempted to measure patient outcomes; most included some measure of

provider outcome, either attitude (n=44), knowledge (n=30), or skills/behaviors (n=22) (see Figure 11).

Quality of Reviewed Studies

We assessed the quality of each study in five domains: representativeness, potential for bias/confounding, intervention description, outcome assessment, and analysis. In general, the articles were better at adequately describing the healthcare providers (representativeness) and intervention (intervention description) than at avoiding bias/confounding, ensuring appropriate outcome assessment, and analysis (see Evidence Table 5).

Selected aspects of the quality assessment are highlighted in Table 4. Of particular note, less than half (n=27) of the studies had an objective outcome assessment; only one third (n=21) included enough detail about the intervention to ensure replication; only 17 of the interventions were developed with a theoretical model; only 21 clearly described the targeted healthcare providers, setting, and dates of study; only 15 had a complete statistical analysis; only 14 included the numbers and reasons for non-inclusion in the study analysis; only eight had an adequate comparison group (concurrent and similar); only two had masking of outcome assessors; and only one study had adequate randomization.

Results of Reviewed Studies

A summary of the results of Question 2 is found in Tables 6. In Table 6 and in our results below, we focus on the 34 studies with the strongest study design (studies that either had a comparison group and/or did a pre- and post-intervention evaluation). We did not focus on articles that described interventions evaluated qualitatively or with only a post-test; however, these articles were reviewed and are included in the presentation of results in Evidence Table 6 in the Appendix. The results are presented by outcome type (knowledge, attitude, skills/behavior, and patient outcomes) and, within outcome type, by targeted provider (physicians, nurses, other providers/mixed groups).

Knowledge Outcomes

Studies in physicians. Six of the seven studies that evaluated changes in physician knowledge following implementation of a cultural competence curriculum found an improvement,[63,67,74,96,111] and one study had mixed results.[59] Of these six studies, two evaluated culture-specific knowledge,[59,67] and four evaluated knowledge about general cultural concepts.[63,74,96,111] There was no clear pattern regarding which type of knowledge (culture-specific versus general) was more often enhanced by cultural competence training for physicians.

Studies in nurses. Four of the seven studies that evaluated changes in nurse knowledge after implementation of a cultural competence curriculum demonstrated an improvement,[72,82,94,98] one had mixed results,[60] and two showed no improvement.[76,91] Of these, four studies evaluated knowledge of general cultural concepts,[72,91,94,98] and three evaluated culture-specific knowledge.[60,76,82] There was no clear pattern regarding which type of knowledge (culture-specific versus general) was more often affected by cultural competence training for nurses.

Studies in other providers/mixed groups. All six of the studies done in mixed groups of

providers or other providers (i.e. mental health providers) demonstrated an improvement in provider knowledge.[55,69,73,93,100,108] Three of these studies evaluated knowledge of general cultural concepts,[55,69,100] two evaluated culture-specific knowledge,[73,93] and one[108] did not specify the type of knowledge evaluated. There was no clear pattern regarding which type of knowledge (culture-specific versus general) was more often expanded by cultural competence training for mixed groups of providers/other providers.

Attitude Outcomes

Studies in physicians. Nine of the 12 studies that evaluated changes in physician attitudes after cultural competence training demonstrated an improvement in attitudes.[111 58,67,74,90,96,102,106,110] These nine studies all examined different types of attitudes, such as increased confidence in communicating with Spanish-speaking patients,[106] greater understanding of the effect of sociocultural issues on the patient-physician relationship,[102] and more positive attitudes towards community health issues.[90]

Three of the 12 studies that evaluated changes in physician attitudes after cultural competence training had no change or mixed results.[59,112,118] Notably, one of these studies demonstrated that after a curriculum that emphasized culture-specific information about Aboriginals, although students did develop more positive attitudes towards Aboriginal people, students were also more likely to agree that "in general, Aboriginal people are all pretty much alike." [59]

Studies in nurses. Nine of the 10 studies that evaluated change in nurses' attitudes after cultural competence training demonstrated some improvement in their attitudes,[57,72,82,84,86,88,94,95,98] and one had mixed results.[71] Although three of these studies demonstrated improvements in cultural self-efficacy,[86,88,98] the other types of attitudes that were measured in these studies were varied and sometimes unspecific, for example, "attitudes about cultural patterns."[120]

Studies in other providers/mixed groups. All three of the studies that were done in mixed groups of providers and that evaluated the effect of the intervention on provider attitudes demonstrated an improvement.[69,73,100] These attitudes included enhanced awareness and appreciation for rural lifestyles,[69] an increased interest in learning about patient and family backgrounds and increased sensitivity to cultural competence,[100] and greater sensitivity to immigrant health concerns.[73]

Skill/Behavior Outcomes

Studies in physicians. All seven of the studies that evaluated the impact of cultural competence training on physician skills and/or behaviors demonstrated an improvement.[58,67,74,77,90,106,111] In one study, participants were given 16 one-hour sessions in which they practiced communication skills with community volunteers and were subsequently shown to be significantly more competent in interviewing a non-English speaking person as rated by a masked psychologist assessing videotapes of the interviews.[77] In one study, participants scored higher on a Spanish language test following 20 hours of training in Spanish,[67] and in another study participants used a Spanish interpreter less often after 20 hours of training in Spanish.[106] Three other studies demonstrated a positive effect on physicians' own general skills self-assessment.[74,90,111]

Studies in nurses. All five of the studies that evaluated the impact of cultural competence

training on nurse skills and/or behaviors demonstrated an improvement.[57,72,82,84,91] Two of these studies showed an increase in nurses' involvement in community-based cancer education programs,[57,82] and another study noted an increase in activities devoted to understanding other racial/ethnic groups and an increase in self-reported social interactions with peers of different races/ethnicities.[91]

Studies in other providers/mixed groups. Both of the studies that evaluated the impact of cultural competence training on the skills and/or behaviors of other providers/mixed providers demonstrated an improvement.[55,93] In one study, there was an increase in referrals of Hispanic Alzheimer's patients and families to appropriate specialized services,[93] and in another study participants were better able to conduct a behavioral analysis and treatment plan.[55]

Patient Outcomes

Only three articles evaluated patient outcomes: one that targeted physicians,[106] one that targeted mental health counselors,[61] and one that targeted a mixed group of providers.[100] The outcome measures were not health outcomes however. All three reported favorable patient satisfaction measures (all related to the interpersonal aspects of care),[61,100,106] and one demonstrated an improvement in adherence to follow-up among patients assigned to the intervention group providers.[61]

In terms of the methods used to bring about such improvements in patient satisfaction and (in one case) adherence, one study trained four mental health counselors about the attitudes that low-income African American women bring to counseling (4 hours total);[61] another study trained nine physicians to speak Spanish (20 hours total);[106] and the third study implemented a state-mandated three-day training program focused on team training, recipient recovery principles, clinical issues, and cultural competence for all staff who have contact with recipients of inpatient mental healthcare.[100]

Results for Question 2a: Costs of Cultural Competence Training

Of the 55 articles eligible for review, only five addressed the costs of cultural competence training.[67,75,90,96,106] Overall, the cost information contained in these articles was too limited to allow a comprehensive estimate of costs.

There are limited data on the costs of international cultural immersion. Four of the five articles[67,75,90,96] described the costs of interventions that involved international travel. Of those, three programs[67,90,96] shared the cost of travel with the students, and one program required students to pay the entire amount.[75] Two programs provided US$2000 (in 2000[96] and in 1995-1996[90]) for each student to travel from the United States to South America, Asia, or Africa for either six[96] or eight[90] weeks. In each of these programs, the students paid the remaining costs. Another program estimated that an 8-day trip from the United States to Mexico cost US$1200 total in 1994, of which the students contributed 60 percent on average and scholarship assistance for the remainder was available through private donations.[67] Another international travel program estimated that it cost each student in excess of Aust$4000 in 1997 to travel from Australia to Thailand for four weeks, and the students paid the entire amount.[75]

There are limited data on the costs of classroom or other types of instruction. One study estimated the cost of 20 total hours of Spanish language instruction for nine physicians to be US $2000 in 2000, not including the opportunity costs for physician time (approximately 20 hours

total for each physician).[106] This intervention, which had one of the best evaluations, was able to show a difference in patient satisfaction. In another program, 60 hours of classroom instruction (20 hours of Spanish-language instruction and 40 hours of cultural competence training focused on Hispanic populations) were provided for 19 students at an estimated local cost of US $3000 in 1994, of which each student contributed US $80.[67] Finally, one program matched 26 students to 26 local ethnically diverse families, asked the students to visit the family six times, and paid each family US $400 in 1996 to 2000.[90]

Summary of Evidence

There is excellent evidence to suggest that cultural competence training can favorably affect the knowledge of healthcare providers (Evidence Grade A) and good evidence that cultural competence training can improve the attitudes and skills of healthcare providers (Evidence Grade B). However, the studies are heterogeneous (perhaps reflecting the complexity of interventions), and it is difficult to conclude which specific types of training interventions are effective in improving particular outcomes. Even within an outcome category, outcome measurements are not uniform, making it difficult to determine which specific types of knowledge, attitudes, or skills are affected by cultural competence training. No studies have examined quality of care process outcomes.

There is good evidence from three studies to suggest that cultural competence training can favorably affect patient satisfaction (Evidence Grade B) and poor evidence that cultural competence training can improve patient adherence (Evidence Grade D), although the one study that examined patient adherence demonstrated a positive impact. No studies have evaluated patient health outcomes.

Evidence is insufficient to determine the cost of cultural competence training (Evidence Grade D). However, one of the studies that demonstrated an improvement in patient satisfaction also included information about cost, and so perhaps the best evidence is its estimated US $2000 to train nine emergency department physicians in the Spanish language.[106]