

Stephanie Alfonso, PhD

Reference annotations from: *Compassionomics: The Revolutionary Scientific Evidence ...* Book by Anthony Mazzarelli and Stephen Trzeciak

Is compassion something intrinsic to the human condition?

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2864937/>

In this review, the authors dissect the often contentious role of empathy in evolution. Because empathy results in individuals enhancing the welfare of others at the expense to the self, this notion has struck many scientists in the field as implausible. However, Darwin, known commonly as the father of evolution, asserted in his book *Descent of Man, and Selection in Relation to Sex*, “sympathy will have been increased through natural selection; for those communities, which included the greatest number of the most sympathetic members, would flourish best, and rear the greatest number of offspring”. The authors explain further their “three lines of reasoning that account for the emergence of an affective state that is oriented toward enhancing the welfare of those who suffer”:

1. In a caregiving system, compassion increases the likelihood that vulnerable offspring will survive. This resulted in the emergence across different cultures of similar caregiving behaviors, including soothing touch, skin-to-skin contact, and specific vocalizations.
2. In sexual selection, both females and males value kindness above other traits. “Compassionate reproductive partners will more likely devote more resources to offspring, to provide physical care—protection, affection, and touch—and to create cooperative, caring communities vital to the survival of offspring.”
3. A third evolutionary argument posits that compassion in others is an important criterion in the formation of relationships with non-kin. Compassionate individuals will more likely exhibit cooperative and trustworthy behavior important not only in professional relations but in long lasting friendships as well. In fact, a study shows that, children high in dispositional empathy enjoy richer friendship networks.

Compassionomics is the branch of knowledge and scientific study of the effects of compassion on health, health care, and health care providers

<https://www.sciencedirect.com/science/article/pii/S0306987717303729?via%3Dihub>

The authors argue that there is an abundance of data in the medical literature and press indicating that we are in the midst of a compassion crisis – a lack of (or inconsistency in) compassionate care in our health systems – and this may have measurable detrimental

effects on patients, patient care, and those who care for patients. A multitude of published studies have reported an association between compassionate, patient-centered care and favorable clinical outcomes for patients. In contrast, the absence of compassion among health care providers (HCPs), is associated with lower quality of care and increased risk of harm to patients through medical errors. The authors screened for papers with human subjects and the terms “compassion” or “compassionate”. Their methodology aimed to create a table summarizing potential mechanisms and outcomes of compassionate care that investigators could use to help inform the design of future studies. The table is quite extensive, but for example, includes how compassionate care promotes neurobiological concordance between HCPs and patients which, in turn, results in decreased burnout among HCPs. In addition, they mention some challenges including the lack of consensus on how empathy is defined and what are appropriate instruments/methodologies to measure compassionate care. In summary, their main hypotheses are that compassionate healthcare is beneficial for (1) patients, by improving clinical outcomes, (2) healthcare systems and payers, by supporting financial sustainability, and (3) HCPs, by lowering burnout and promoting resilience and well-being. The purpose of creating their compassionate care outcomes table was to give legitimacy to the term ‘compassionomics’ in the science of evidence-based medicine.

Patients and HCPs alike are concerned about a lack of compassion in healthcare

<https://www.prnewswire.com/news-releases/national-survey-data-presented-at-the-compassion-in-action-conference-show-mixed-reactions-on-state-of-compassion-in-us-healthcare-300480125.html>

In this 2017 survey a follow up of one conducted in 2010, researchers found that while patients feel more positively about the U.S. healthcare system today than in 2010, they're concerned, as are physicians and nurses about the future of compassion. Because the healthcare system has moved to more patient-centered care, researchers asked patients and HCPs alike how feasible it would be to provide compassionate care, 69% of physicians thought that it would be more difficult and nearly half of the patient, reported that these changes would make it more difficult to provide compassionate care.

Burnout begins in early medical training

<https://jamanetwork.com/journals/jama/article-abstract/195037>

In this paper, the authors examined mood patterns and changes in empathy among internal medicine residents over the course of the internship year. The authors focused on 3 measures concerned with empathy: perspective taking, empathic concern, and personal distress. ‘Perspective-taking’ assessed the intern’s tendency to spontaneously adopt the psychological viewpoint of others. ‘Empathic concern’ assessed feelings of

sympathy and concerns for others' misfortune. 'Personal distress' measured "self-oriented" feelings of anxiety and unease in interpersonal settings. The participants took the questionnaires at 4 timepoints to measure changes through the first year of residency. As early as timepoint 2, residents exhibited mood changes related to anger and depression. In addition, as the internship year neared completion, the cohort demonstrated little improvement in mood state: anger and fatigue persisted, as did lack of vigor and there was a significant increase in personal distress coupled with a decrease in empathic concern.

Physicians play an active role in regulating the quantity of information elicited at the beginning of the clinical encounter and, in majority of cases, often interrupt patients

<https://annals.org/aim/article-abstract/699136/effect-physician-behavior-collection-data?volume=101&issue=5&page=692>

In this 1984 study, doctor's visits were recorded and their initial exchanges were analyzed. In 69% of the visits the physician interrupted the patient's initial statement and directed questions toward a specific concern; in only 1 of these 51 visits was the patient afforded the opportunity to complete the opening statement. In 8% of return visits, no solicitation whatever was made. The consequences of such exchanges result in the potential loss of relevant information that might point to other underlying ailments/diseases. A follow up study found a slight improvement from the 17 second interruption found in the 1984 study to 23 seconds in a 1999 study. Currently, the healthcare system is doing much worse at an 11 second interruption rate.

Physicians seem to have a "blind spot" on their ability to relate to and connect with patients

<https://jamanetwork.com/journals/jama/article-abstract/203258>

In this paper, the authors' objective was to determine how accurately physicians self-assess compared with external observations of their competence. They looked at 17 previously published studies where self-assessments and external assessments were provided. They found that in 65% of comparisons between self- and external assessment, there was little, no, or an inverse relationship between the two.

<https://insights.ovid.com/pubmed?pmid=10549618>

In this study, patients and their primary care physicians each filled in a questionnaire: patients were asked about the quality of communication with their physician, their satisfaction, and their experience of six emotions. Physicians were asked to estimate the patients' views on each of these questions. Correlations between patients' and physicians'

views of patients' affective state were weak to moderate. These results suggest that the patients' emotions may be an especially neglected aspect of communication in their routine visits to their physicians.

Successful communication with physicians supports patients' coping with illness-associated stress

<https://www.journalofhospitalmedicine.com/jhospmed/article/147919/hospital-medicine/associations-physician-empathy-patient-anxiety-and-ratings>

In this study, the authors quantitatively analyzed coded admission encounters and survey data to examine the association between attending physicians' responses to patient expressions of negative emotion and anxiety and ratings of communication. They found that more empathic responses during hospital admittance procedures served as an important building block of patient-centered communication and even promoted adherence to medical treatment plans. In addition, nonempathic responses to negative emotion were associated with more strongly negative ratings of hospitalist communication. Finally, they debunked the widespread held belief that encouraging patients to speak further about emotion will result in excessive visit lengths as they did not find a statistical association between empathic responses and encounter duration.

Compassion, the active form of empathy, has been found lacking in patient care

<https://bmcpalliatcare.biomedcentral.com/articles/10.1186/s12904-016-0080-0>

This review encompasses 25 years of literature on compassion, interestingly enough, the number of citations on compassion in healthcare has spiked since 2010. Some of the findings were recurring findings; for example, incoming residents and how their compassionate qualities can diminish over time due to the stressful nature of the job. In addition, when addressing whether empathy is innate or can be taught, clinicians and students described that teaching compassion-based qualities is difficult but that communication skills associated with compassionate care can be taught. In a separate study, fourth year medical students identified role modeling as being an ideal teaching method in imparting compassion in clinical education. One important finding, that is especially pertinent to the measurability of empathy in healthcare, was that patients reported that receiving compassionate care from clinicians aided recovery, including an increased sense of responsibility and control over their health. The review touches on themes across the literature such as the nature of compassion, how compassion is developed or eroded within the clinical practice and education settings, the interpersonal qualities, skills, and actions that mark compassion, and outcomes of compassionate care.

Social relationships, or the relative lack thereof, constitute a major risk factor for health

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5102822/>

In this study, loneliness and its relationship to cognitive function was examined in a population of adults ages 65 or over. In previous studies, loneliness was found to predict greater cognitive decline and a doubling of the risk of Alzheimer's disease (AD) dementia. It is important to note that depression is an established risk factor for mild cognitive impairment and loneliness and depression can coexist and/or have a synergistic effect on cognitive abilities. For this reason, both loneliness and depression were evaluated. The authors found that greater loneliness was associated with accelerated cognitive decline over 12 years independent of established socio-demographic risk factors (greater age, female sex, low education, low socioeconomic status) and other significant factors such as low social network, poor health and greater baseline depression.

Emotional stress is associated with increased risk of cardiovascular disease

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(16\)31714-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)31714-7/fulltext)

This study aimed to understand how stress can lead to adverse longterm health effects. They studied the amygdala a brain region involved in stress, to determine whether its resting metabolic activity predicts risk of subsequent cardiovascular events. In mouse models, stress increases proliferation of haemopoietic stem cells and progenitor cells in the bone marrow, accelerates innate immune cell output and cytokine production, and potentiates atherosclerosis. The authors found for the first time in human beings that resting metabolic activity within the amygdala is significantly associated with the risk of developing cardiovascular disease independently of established cardiovascular risk factors. Furthermore, the link between amygdalar activity and cardiovascular disease events was substantially mediated by arterial inflammation (which in turn was substantially mediated by upregulated bone-marrow activity).

Parasympathetic nervous system activation is responsible for the beneficial physiological effects of compassion

<https://www.sciencedirect.com/science/article/pii/S0301051114002695?via%3Dihub>

<https://www.sciencedirect.com/science/article/abs/pii/S1550830712000377?via%3Dihub>

Studies have shown that heart rate variability (HRV) is associated with overall good health, normal social interaction skills and decreased stress. In this meta-analysis, the

authors collated statistics from thirteen studies in which participants participating in social interactions have their HRV simultaneously collected. The results revealed that negative social interactions decrease HRV in a manner similar to a widely used stress test.

In this second study, researchers looked at the effects of non verbal compassion communication. During all interventions, the practitioner meditated on loving-kindness toward the subject. For tactile interventions, the practitioner touched subjects on arms, legs, and hands; for nontactile interventions, the practitioner pretended to read. They found that interventions significantly decreased heart rate and overall increased, albeit not significantly, activation of autonomic nervous system.

A health care provider that is compassionate can readily build trust with a patient.

<https://journals.sagepub.com/doi/abs/10.1177/0163278704267037>

<https://www.sciencedirect.com/science/article/abs/pii/S0738399112004284>

In the above studies, the authors found that patient-perceived physician empathy significantly influenced patient satisfaction, trust building and compliance. The first study interviewed 550 outpatients and found that the more empathic physicians were perceived as more higher skilled and more trustworthy than less empathic physicians. Similarly, the second study found that patient-centered interviewing led to a much more positive patient satisfaction. Surprisingly, this also correlated with a significantly reduced pain-related neural activation in the left anterior insula (the region of the brain for experiencing pain) when the interviewing doctor's picture was shown. If this study is confirmed, it would show a neurobiological correlate of patient-centered care and would provide a scientific rationale for its use clinically.

Health care providers 'nonverbal behavior in the therapeutic exchange can have a big effect on patient therapeutic outcomes.

<https://web.stanford.edu/group/ipc/pubs/2002AmbadyPhys.pdf>

Two studies explored the link between health care providers 'patterns of nonverbal communication and therapeutic efficacy. Physical therapists were videotaped during a session with a client and subsequently, their nonverbal behavior was rated by naive judges. Therapists 'distancing behavior was strongly correlated with short- and long-term decreases in their clients 'physical and cognitive functioning. Distancing was expressed through a pattern of not smiling and looking away from the client, the elderly population was especially sensitive to this behavior. In contrast, facial expressiveness, as revealed

through smiling, nodding, and frowning, was associated with short- and long-term improvements in functioning.

Empathy in patient care is defined as a predominantly cognitive attribute that involves an understanding of pain and suffering of the patient, combined with a capacity to communicate this understanding, and an intention to help.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6245107/>

There was a need for a content-specific and context-relevant empathy measuring instrument. In 2001, the Jefferson Scale of Empathy (JSE) was developed to measure empathy in the context of health professions education and patient care for administration to health professions students and practitioners. Items are answered on a 7-point Likert-type scale (1 = Strongly Disagree, 7 = Strongly Agree). Half of the items are positively worded and directly scored, and the other half are negatively worded (reverse scored). Since its development, numerous studies have been published in which associations between scores of the JSE and a number of pertinent variables such as positive patient outcomes and medical students' clinical competence have been reported.

JSE scores of physician empathy are associated with clinical outcomes for patients with diabetes mellitus.

<https://insights.ovid.com/crossref?an=00001888-201209000-00026>

This study was one of the first and largest to use the Jefferson Scale of Empathy (JSE): it included 20,961 patients with type 1 or type 2 diabetes mellitus from a population of 284,298 adult patients in Parma, Italy, enrolled with one of 242 primary care physicians for the entire year of 2009. Participating physicians' JSE scores were compared with occurrence of acute metabolic complications in diabetes patients hospitalized in 2009. Researchers found that patients of physicians with high empathy scores, compared with patients of physicians with moderate and low empathy scores, had a significantly lower rate of acute metabolic complications.

Social support can protect against stress-induced susceptibility to infectious disease

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4323947/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2720820/>

In this study, researchers measured perceived support via a questionnaire that assessed daily interpersonal conflict and receipt of hugs on 14 consecutive evenings. Subsequently, participants were exposed to a virus that causes a common cold, and

monitored to assess infection and illness signs. Perceived support or receiving more hugs protected against the rise in infection risk associated with increasing frequency of conflict. For those receiving low social support, more frequent interpersonal tension/conflict was associated with an increased probability of infection subsequent to viral exposure. In contrast, among persons perceiving greater support, frequency of conflict was unrelated to infection susceptibility. Among infected participants, greater perceived support and more frequent hugs each predicted less severe illness signs. These data suggest that hugging and other forms of social support that lower stress may help patients in coping with pathogenic illnesses.

In the second study, researchers used a common patient-scored questionnaire Consultation and Relational Empathy (CARE) on patients with the common cold to assess practitioner-patient interaction, especially empathy. Cold severity and duration were assessed and nasal wash was performed to measure the immune cytokine IL-8. The results were similar to the previous study: clinician empathy, as perceived by patients, significantly predicted duration and severity of the common cold and had an effect on the efficiency of the immune system response.

Compassion-based interventions can reduce patients 'self-criticism and shame related to their mental health condition

<https://www.cambridge.org/core/journals/the-cognitive-behaviour-therapist/article/using-compassion-focused-therapy-as-an-adjunct-to-traumafocused-cbt-for-fire-service-personnel-suffering-with-traumarelated-symptoms/F44D0DF4281165BA99F314EDC807FA73>

https://www.researchgate.net/profile/Teresa_Au3/publication/311089374_Compassion-Based_Therapy_for_Trauma-Related_Shame_and_Posttraumatic_Stress_Initial_Evaluation_Using_a_Multiple_Baseline_Design/links/599acf1fa6fdcc261588781d/Compassion-Based-Therapy-for-Trauma-Related-Shame-and-Posttraumatic-Stress-Initial-Evaluation-Using-a-Multiple-Baseline-Design.pdf

This study focused on individuals working for emergency services who often bear witness to distressing events. Researchers aimed to investigate the effectiveness of using Compassion-Focused Therapy (CFT) as an adjunct to Trauma-Focused Cognitive Behavioural Therapy (TF-CBT) to help reduce symptoms of trauma, anxiety and depression and to increase self-compassion. Significant reductions in symptoms of depression, anxiety, hyperarousal, intrusion and avoidance and a significant increase in self-compassion occurred in patients post-therapy. The study provides some preliminary evidence that using CFT as an adjunct to TF-CBT may help people working in emergency services, who bear witness to the distress of others, cultivate compassion for their own suffering.

Similarly, this study used CFT but, in this case, to assess its efficacy for reducing trauma-related shame and PTSD symptoms. They found that by the end of treatment, 9 of 10 participants demonstrated reliable decreases in PTSD symptom severity, while 8 of 10 participants showed reliable reductions in shame. For most participants, self-compassion increased and self-blame decreased. These increases in self-compassion suggest that it is feasible for trauma survivors with low baseline levels of self-compassion to increase in self-compassion over a relatively brief period; in addition, improvements continued even after a 4 week follow up assessment.

Interventions aiming to cultivate compassion towards self and others have been developed. This meta-analysis examined twenty-one randomized controlled trials (RCTs) to measure the effects of compassion-based interventions on a range of outcome measures.

<https://www.sciencedirect.com/science/article/abs/pii/S0005789417300667>

Compassionate care can raise patient self-efficacy, which is defined as a patient's belief that their treatment will be successful and that they will recover and achieve good health.

<https://www.jabfm.org/content/26/4/409.long>

In this study, patient's adherence to an antidepressant treatment plan was measured comparing a group who received patient-centered questioning from their physicians versus a group who received regular questioning. The videotaped interviews showed that language consistent with 'motivational interviewing (MI)', including MI-adherent statements and reflective listening, were associated with increased odds of filling a prescription for an antidepressant medication and a higher estimate of adherence to antidepressant medication. This is especially important because the literature shows that non-adherence to antidepressant medication is one of a few modifiable predictors of a poor clinical outcome for people with depression.

Patients' recall of provided information during bad news consultations is poor.

<https://pdfs.semanticscholar.org/fbc3/84fddd0a3ab34251769e86dca689842e03fe.pdf>

According to the attentional narrowing hypothesis, the emotional arousal caused by a bad news consultation might be responsible for hampered information processing. Most patients do remember their diagnosis, but have difficulty recalling information such as treatment plans, recommendations and side effects. In this study, fifty healthy women were asked to view two scripted video-vignettes of a bad news consultation in which physician's verbal communication was manipulated (standard vs. affective condition).

After video-watching, self-reported anxiety and uncertainty were measured. The authors found that physician's affective communication reduces feelings of anxiety and uncertainty after receiving bad news. Moreover, affective communication enhanced the ability to recall information. This study is of outmost importance because remembering medical information is crucial for patients for coping with their disease and making informed treatment decisions.

Adjustment or psychosocial adaptation to cancer has been defined as an ongoing process in which the individual patient tries to manage emotional distress, solve specific cancer-related problems, and gain mastery of or control over cancer-related life events.

<https://www.cancer.gov/about-cancer/coping/feelings/anxiety-distress-hp-pdq>

Pooled results from multiple studies suggest that approximately 40% of cancer patients report significant distress. To effectively match patient needs with treatment interventions, health care professionals must be able to distinguish the periodic difficulties (i.e. be empathetic) that characterize normal adjustment from more-serious mental disorders. This is important to note as some cancer patients will undergo a lot of anxiety and distress but will not necessarily be diagnosed with a mental disorder. Cancer centers have developed several questionnaires to assess what kind of difficulties/distress cancer patients are experiencing and what additional steps must be taken.

Important changes in physicians' communication skills were evident after an 8-hour training program on 'emotion handling'.

<https://www.ncbi.nlm.nih.gov/pubmed/7677554>

In this randomized, controlled field trial, physicians were randomized to a no-training control group or one of two communication-skills training courses designed to help physicians address patients' emotional distress. Both emotionally and not distressed patients were asked to fill out a questionnaire. The training improved the process and outcome of care without lengthening the visits and, importantly, patients of trained physicians reported reduction in emotional distress for as long as 6 months.

Belief in recovery matters

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3634672/>

In this study, researchers followed a cohort of patients with coronary artery disease for 15 years. The patients had an initial medical and psychosocial evaluation and extended follow-up to examine the prognostic effects of recovery expectations. In other words, the authors wanted to know if how patients did depended on how they thought they would do. They found that expectations of patients regarding their prospects for recovery did indeed predict subsequent physical and social functioning. The implications of this study

are that physicians have the power to alter some aspects of patient beliefs and this provides an avenue for intervention that would lead to more favorable outcomes for the patients' physical and psychological well being.

A compassionate connection between a patient and their health care provider has a meaningful effect on treatment adherence

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1924639/>

In this study, the authors focused on one aspect of patient-centeredness: the patients' perception of being "known as a person". The patient cohort were HIV positive patients whose treatment adherence to highly active antiretroviral therapy (HAART) is a crucial factor in their disease prognosis. A patients' positive answer to "being known as a person" correlated significantly with receiving HAART, adhering to HAART, and having undetectable serum HIV RNA. These results support the hypothesis that the quality of patient-physician relationship is directly related to the health of patients. In addition to better adherence and clearing the virus from the blood more effectively, being known as a person was also associated with HIV patients reporting higher scores for quality of life.

A measure of patient enablement

<https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-019-4182-2>

The Patient Enablement Instrument (PEI) is an established patient-reported outcome measure (PROM) that reflects the quality of appointments with general practitioners. It is a six-item questionnaire administered to the patient immediately after a consultation. Several studies have now shown that higher enablement is associated with factors such as longer consultation duration, higher patient satisfaction, positive experiences of doctor-patient communication, and perceptions of the doctor's empathy. Interestingly, PEI scores seem to vary according to the patients' ethnic background and between countries.

Patient enablement requires compassion

<https://bmcfampract.biomedcentral.com/articles/10.1186/1471-2296-13-6>

In this study, researchers wanted to measure how socioeconomic status affects patient's understanding of their disease and their treatment plans and how apt they feel managing their self care. The study groups were patients in Scotland from areas of high socio-economic deprivation and in low deprivation areas, other factors such as other emotional stressors and disease progression were also taken into consideration. The post-consultation questionnaires used were: PEI and GP empathy (measured by the

CARE Measure). Their results show that although numerous variables showed an association with patient enablement, only some factors were independently predictive: patients with multimorbidity or more long-term conditions, and those consulting about a long-standing problem had reduced enablement scores in both affluent and deprived areas. In deprived areas, emotional distress had an additional negative effect on enablement. The most interesting point was that perceived GP empathy had a positive effect on enablement in both affluent and deprived areas and maximal patient enablement was never found with low empathy. This suggests that physician empathy is a requirement for patient enablement.

Depersonalization results in suboptimal patient care

<https://jamanetwork.com/journals/jama/fullarticle/184625>

<https://medschool.ucsd.edu/som/hear/resources/Documents/Burnout%20and%20medical%20errors%20among%20American%20Surgeons%202010.pdf>

In this study, authors surveyed medical residents to determine the contribution of distress and fatigue to the incidence of medical errors. The surveys included self-assessment of medical errors, as well as questionnaires assessing fatigue, overall quality of life, burnout, and symptoms of depression. Thirty-nine percent of residents reported making at least 1 major medical error during the 5 year study period. Further analyses showed there was an association of self-reported error with the sleepiness scale score and fatigue score; as well as with emotional exhaustion. It is important to note that both medical errors as well as the other metrics relied upon residents' feelings of both depersonalization and self-performance, which gives this study an added element of validity. The second study published in Annals of Surgery found that surgeons with self reported high levels of exhaustion and depersonalization made three times more major surgical errors compared to surgeons with lower scores of emotional exhaustion. These studies highlight how physician burnout is an important determinant of patient safety and care and strategies to prevent or mitigate it should be addressed.

Hospitals with high patient-reported experience scores have higher profitability

<https://www2.deloitte.com/content/dam/Deloitte/us/Documents/life-sciences-health-care/us-dchs-the-value-of-patient-experience.pdf>

The consulting company Deloitte studied the association between patient-experience surveys and hospital profit margins. To focus solely on patient-experience metrics, they controlled for hospital and local area characteristics: including hospital ownership, location, teaching status, and patient case mix. They found that hospitals with "excellent" patient ratings had a net margin of 4.7 percent, on average, as compared to just 1.8 percent for hospitals with "low" ratings. In addition, they looked at how hospitals might

increase patient satisfaction, for example by training nurses on how to be more compassionate and spending extra time with patients. They found that although these strategies require a financial investment they increase revenue even more; and hence, hospitals with higher rankings might have more resources to invest in patient experience. These results are even more pertinent to the current status of the medical field in which the market has shifted towards patient-centered care and patients will choose and recommend hospitals that have higher ratings. These analyses show that hospital investment in enhancing patient experiences can lead to substantial financial payouts.

Physicians who lack a strong personal connection with their patients end up with higher referrals to specialists and more diagnostic tests

<https://www.jabfm.org/content/24/3/229.long>

This paper investigates the relationship between patient-centered communication and medical costs. They incorporated a patient-centered care interactional analysis system that includes 5 important dimensions: (1) understanding the patient's illness within a broader biopsychosocial context; (2) appreciating the patient's experience of illness; (3) advocating for an egalitarian relationship; (4) creating a therapeutic alliance; and (5) acknowledging the impact of the participants' personal qualities on the medical encounter. After they control for sex and age, they found that numbers of visits to specialty care clinics, hospitalizations, and laboratory and diagnostic tests in a one year period decreased for patients who had a greater average amount of patient-centered care. Some explanations for these results are that the patient-centered approach that includes increased patient participation during the visit reduces patients' anxiety and their perceived need for further investigations and referrals. In addition, patients feel that their physician has an understanding of their illness and may have greater trust in the physician resulting in decreased requests for further testing and specialist consultations. This increased interaction, in turn, results in the physician gaining more knowledge about the patient, which may lead to less diagnostic uncertainty and decreased need to order additional diagnostic procedures.

Financial principles can be applied to determine the economic cost of physician burnout and guide appropriate investment to address the problem

<https://jamanetwork.com/journals/jamainternalmedicine/article-abstract/2653912>

The authors make a case for the financial principle of return on investment to calculate savings a medical institution would incur if it reduced physician burnout. A major driver of costs is the higher turnover rate induced by this burnout. Turnover results in both direct costs associated with recruitment, as well as lost revenue during recruitment, onboarding, and the time it takes for a new physician to reach optimal efficiency in a new system. The largest cost associated with replacing a physician is the opportunity

cost of lost patient care revenue. The authors supported by previous studies state that the largest financial impact (greater than turnover) is a decrease in productivity which interestingly is linked to decrease quality of care. Burnout is primarily a system-level problem driven by excess job demands and inadequate resources and support not an individual problem triggered by personal limitations; therefore, appropriate system level interventions to provide support, reduce workload and promote a culture change in the organization could all result in cost savings for the medical institution.

A brief intervention grounded in the neurobiology of empathy significantly improved physician empathy as rated by patients

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3445669/>

The authors tested an innovative empathy training protocol grounded in neuroscience to improve physician empathy. Patients rated physicians on the Consultation and Relational Empathy Measure (CARE). The CARE is a 10-item instrument assessing physician empathy and relational skill, each item is rated on a 5-point ordinal scale, and the items are summed to yield a total score. The training protocol aimed to provide the scientific foundation for the neurobiology and physiology of empathy training with an emphasis on: improving skills on decoding subtle facial expressions in patient–physician interactions, to teach empathic verbal and behavioral responses, and to teach mindfulness practices. In the training group there was a strong positive correlation between the ability to learn subtle facial expressions of emotion and change in patient-rated empathy. Importantly, physicians reported improvement in a number of areas specifically targeted by the training, such as listening carefully to patients without interruption, making meaningful eye contact, interpreting non-verbal cues, and greater self-awareness and ability to manage physiological and emotional reactions to challenging patients