Prayer and Medical Science

A Commentary on the Prayer Study by Harris et al and a Response to Critics

It is fatal to dismiss antagonistic doctrines, supported by any body of evidence, as simply wrong.

Alfred North Whitehead, 19481

HE RANDOMIZED, controlled trial by Harris et al² on the effects of remote intercessory prayer on outcomes of patients admitted to a coronary care unit evoked several comments from physicians.

See also pages 1870 to 1878

Several respondents implied that the attempt to study the remote effects of prayer is wrong in principle. This is because, according to Dr Sandweiss,³ science deals with facts, not "miracles." Yet, if events occur in controlled laboratory studies, as suggested by evidence cited below, these happenings presumably follow natural law and are not considered miraculous.

We should be cautious in calling events *miraculous* or *mystical*, because the subsequent course of history may reveal that these terms reflect little more than our own ignorance. For example, when Newton invoked the notion of universal gravity in the 17th century to explain his observations, he was charged by his contemporaries with surrendering to mysticism, as prayer researchers are often accused today.

As philosopher Eugene Mills⁴ describes,

[Newton's critics] disapproved of his failure to explain why bodies behaved in accordance with his laws, or how distant bodies could act on one another . . . This sort of worry no longer bothers us, but not because we have answered it. Today we are as baffled by the remote effects of prayer as Newton's critics were by the distant effects of gravity. But, just as the dispute over gravity gradually abated, the debate surrounding intercessory prayer may also diminish with time, even though our ignorance about the mechanism involved may remain.

Dr Van der Does⁵ dismisses the effects of intercessory prayer because they would be indistinguishable empirically from the effects of clairvoyance and telepathy, which he implies are nonsense. (He presumably means not clairvoyance or telepathy, which are forms of anomalous cognition, but psychokinesis, the anomalous perturbation of distant events.) However, there is considerable evidence that neither telepathy nor psychokinesis is nonsense,⁶ in which case the indistinguishability between prayer and psychokinesis would not invalidate prayer.

Dr Sandweiss³ also refers dismissively to psychokinesis, apparently unaware of the evidence favoring this phenomenon. For example, in *Foundations of Physics*, one of physics' most prestigious journals, Radin and Nelson⁷ reported a metaanalysis of 832 studies from 68 investigators that involved the distant influence of human consciousness on microelectronic systems. They found the results to be "robust and repeatable." In their opinion,

Unless critics want to allege wholesale collusion among more than sixty experimenters or suggest a methodological artifact common to . . . hundred[s of] experiments conducted over nearly three decades, there is no escaping the conclusion that [these] effects are indeed possible. While these hundreds of studies do not involve actual prayer, they nonetheless deal with whether human intention can, in principle, affect the physical world at a distance.

In recent years, researchers have also studied the effects of mental efforts to change biological systems.8 Scores of controlled studies have examined the effects of intentions, often expressed through prayer, on biochemical reactions in vitro, on the recovery rate of animals from anesthesia, on the growth rates of tumors and the rate of wound healing in animals, on the rate of hemolysis of red blood cells in vitro, and on the replication rates of microorganisms in test tubes. Testing prayer in lower organisms makes sense for the same reason we test drugs in nonhumans. We share physiological similarities with animals and bacteria; if prayer affects them, it may affect us as well. These studies are too often ignored, even by researchers interested in the effects of intercessory prayer in humans. This is unfortunate because many of these studies9 have been done with great precision and have been replicated by different investigators in different laboratories. They make up the basic or bench science underlying the objective study of prayer.

Dr Sandweiss³ says that since we know that prayer cannot operate remotely, taking this possibility seriously requires us to "suspend natural law," which results in "pseudoscientific mischief." But, as there is no agreement among scientists about which natural laws govern consciousness, it is imprudent to declare which laws might be violated

and what mischief might result. Several outstanding scholars have emphasized our appalling ignorance about the basic nature of consciousness. John Searle,¹⁰ one of the most distinguished philosophers in the field of consciousness, has said, "At our present state of the investigation of consciousness, we don't know how it works and we need to try all kinds of different ideas." Philosopher Jerry A. Fodor¹¹ has observed, "Nobody has the slightest idea how anything material could be conscious. Nobody even knows what it would be like to have the slightest idea about how anything material could be conscious. So much for the philosophy of consciousness." Recently Sir John Maddox,12 the former editor of Nature, soberly stated,

The catalogue of our ignorance must . . . include the understanding of the human brain . . . What consciousness consists of . . . is . . . a puzzle. Despite the marvelous success of neuroscience in the past century . . , we seem as far away from understanding . . . as we were a century ago . . . The most important discoveries of the next 50 years are likely to be ones of which we cannot now even conceive.

If these observers are anywhere near the truth, we should be hesitant to declare emphatically what the mind can and cannot do.

Dr Sandweiss³ states that Harris et al have taken "a *P* value out of context" and that their *P* value is "out of control." He implies that the beliefs and practices of physicians depend strongly on statistically valid studies and that P=.04 is too weak to justify a change in "current theories." Do *P* values determine what we physicians believe and how we practice medicine? This is a noble sentiment, but evidence suggests we are not as objective as Dr Sandweiss implies. Yale surgeon and author Sherwin B. Nuland¹³ states,

Unlike other areas in which fads come and go, medical styles [of practice] are meant to be supported by irrefutable evidence. That assumption is so far off the mark that the term 'medical science' is practically an oxymoron.

Referring to a 1978 report by the Congressional Office of Technology Assessment,¹⁴ Nuland states, "no more than 15 percent of medical interventions are supported by reliable scien-

tific evidence." Richard Smith,15 editor of the British Medical Journal, agrees, stating, "only about 15% of medical interventions are supported by solid scientific evidence. . . . This is partly because only 1% of the articles in medical journals are scientifically sound and partly because many treatments have not been assessed at all." And David A. Grimes¹⁶ of the University of California-San Francisco School of Medicine states, "much, if not most, of contemporary medical practice still lacks a scientific foundation." These observations suggest that a double standard is perhaps being applied to prayer research, according to which levels of proof are demanded that may not be required of conventional therapies-the "rubber ruler," the raising of the bar, the ever-lengthening playing field.17

Do serious scientists really believe that the effects of intercessory prayer are fantasy, as several letter writers imply? No doubt some do. But in a recent survey¹⁸ of the spiritual beliefs of American scientists, 39% of biologists, physicists, and mathematicians said they not only believed in God, but in a god who answers prayers. The highest rate of belief was found in the field of mathematics, which is generally considered the most precise of all the sciences. Many distinguished scientists favor prayer. A long list of individuals, including Nobelists, who have been cordial to consciousness-related events, such as distant, intercessory prayer, has been assembled by philosopher David Griffin.19

Should the empirical study of intercessory prayer be abandoned, as several letter writers imply? More than a century ago, a similar debate took place among British scientists about telepathy, clairvoyance, and psychokinesis, which, like prayer, presume that consciousness can operate remotely. Nobelist Sir William Crookes (1832-1919), the discoverer of thallium, contrasted his own approach with that of his fellow physicist Michael Faraday (1791-1867), famous for his work in electricity and magnetism. Crookes²⁰ stated:

Faraday says, 'Before we proceed to consider any question involving physical principles, we should set out with clear ideas of the naturally possible and impossible.' But this appears like reasoning in a circle: we are to investigate nothing till we know it to be possible, whilst we cannot say what is impossible, outside pure mathematics, till we know everything. In the present case I prefer to enter upon the enquiry with no preconceived notions whatever as to what can or cannot be.

The spirit of open inquiry would seem to validate Crookes' stance. Scientific puzzles do not solve themselves unaided. How are the mysteries of consciousness and prayer to be resolved unless researchers take a stab at them?

Dr Sandweiss³ suggests that the lack of an accepted theory underlying intercessory prayer diminishes the respectability of this area of investigation. In the history of medicine, however, we have often tolerated ignorance of mechanism and absence of theory. Examples include the use of aspirin, colchicine, and quinine, as well as the use of citrus fruits in scurvy, as Harris et al point out. The mechanisms of action of most general anesthetics are still a mystery, yet that does not preclude their use.

While it is true that there is no generally accepted theory for the remote actions of consciousness, many mathematicians, physicists, and biological and cognitive scientists are currently offering hypotheses about how these events may happen. Hypotheses that are compatible with the distant effects of intercessory prayer have been advanced by Nobel physicist Brian Josephson,21 physicist Amit Goswami²² of the University of Oregon's Institute of Theoretical Science, mathematician and cognitive scientist David J. Chalmers, 23,24 systems theorist Ervin Laszlo,25 mathematician C. J. S. Clarke,²⁶ and many other respected scholars.27 These models of consciousness generally advocate a nonlocal view of the mind-a view in which consciousness is not localized or confined to specific points in space (such as the brain) or time. Levin²⁸ has developed a theoretical model of how prayer may heal that takes several of these hypotheses into account. I have described the implications of a nonlocal model of consciousness for medicine.29

Dr Hammerschmidt³⁰ suggests that Harris et al are "putting God to the test" in their study. Are tests of prayer blasphemous, and are prayer researchers heretics? I have found that investigators in this area approach their subject with reverence and respect; indeed, I have not found a single exception. They seem to epitomize the view of chemist Robert Boyle,³¹ the 17th-century author of Boyle's Law, who suggested that experimental scientists are "priests of nature" and that science is so sacred that scientists should carry out their experiments on Sundays as part of their Sabbath worship.

Dr Goldstein³² is "concerned with the potential effect of [the Harris et al] study and its publication on the reputation of hospitals involved and on the integrity of health care organizations in general." The reputation of any healing institution is precious and should be protected, but the suggestion that a hospital's reputation will be endangered by the indiscriminate use of prayer is exceedingly hypothetical. It is more likely that the widespread application of prayer will enhance the reputation of healing institutions, in view of the facts that nearly 80% of Americans believe in the power of prayer to improve the course of illness,³³ and nearly 70% of physicians report religious inquiries for counseling on terminal illness³⁴ yet only 10% of physicians ever inquire about patients' spiritual practices or beliefs.³⁵ In a survey³⁶ of hospitalized patients, three fourths said they believed their physician should be concerned about their spiritual welfare, and one half said they believed their physician should not only pray for them but with them. It is unlikely that prayer could threaten the reputation of hospitals to the extent of many conventional therapies. A recent meta-analysis of prospective studies by Lazarou et al³⁷ found that more than 100000 persons die in US hospitals each year from adverse drug reactions, "making these reactions between the fourth and sixth leading cause of death." A recent survey³⁸ of American adults asked about their concerns before checking into a hospital or other health care facility. Sixtyone percent were "very concerned" about being given the wrong medicine, 58% about the cost of treatment, 58% about the negative interaction of multiple drugs, 56% about medical procedure complications, 53% about receiving correct information about medications, and 50% about contracting an infection during their stay. Concerns about being indiscriminately prayed for did not make the list.

Dr Pande³⁹ suggests that the analogy by Harris et al with James Lind's discovery of the healing potential of citrus fruits in scurvy is inappropriate. A person deprived of vitamin C will develop scurvy, whereas a person deprived of prayer or believing in God's existence, he states, will not become unhealthy. There is evidence to the contrary. Scores of studies^{40,41} suggest that, on average, individuals deprived of religious meaning live shorter, less healthy lives than people who follow some sort of religious path, which almost always includes prayer.

Drs Sloan and Bagiella⁴² question whether Harris et al are justified in suggesting that intercessory prayer be considered an adjunct to conventional medical practice, since there is no consensus in medicine about this controversial intervention. There is indeed no consensus, but whether this is because of a lack of data or ignorance of current evidence is a valid question.43 Certainly further investigation of intercessory prayer is warranted, but we need not wait until all the answers are in before employing prayer adjunctively. This view is represented by Lancet editor Richard Horton⁴⁴ in his "precautionary principle." Horton states,

We must act on facts and on the most accurate interpretation of them, using the best information. That does not mean that we must sit back until we have 100 percent evidence about everything. When the . . . health of the individual is at stake . . . we should be prepared to take action to diminish those risks even when the scientific knowledge is not conclusive.

Although skepticism is an invaluable component of scientific progress, it can shade into a type of dogmatic materialism that excludes intercessory prayer in principle,⁴⁵ as when Newton's critics condemned universal gravity as occult nonsense without weighing the evidence. Both true believers and committed disbelievers in intercessory prayer might heed the view of mathematical physicist and philosopher Alfred North Whitehead,⁴⁶ who coauthored *Principia Mathematica* with Bertrand Russell:

The Universe is vast. Nothing is more curious than the self-satisfied dogmatism with which mankind at each period of its history cherishes the delusion of the finality of its existing modes of knowledge. Sceptics and believers are all alike. At this moment scientists and sceptics are the leading dogmatists. Advance in detail is admitted: fundamental novelty is barred. This dogmatic common sense is the death of philosophical adventure. The Universe is vast.

Larry Dossey, MD 878 Paseo del Sur Santa Fe, NM 87501 (e-mail: ldossey@ix.netcom.com)

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