

GREAT MEDICINE

A global survey says the biggest medical milestone of the last 150 years is not vaccines, antibiotics, open-heart surgery, or the discovery of DNA

Quick. What's the greatest medical milestone of the last 150 years? Is it vaccines? Antibiotics like penicillin? X-ray and MRI imaging? Open-heart surgery? The discovery of DNA?

No, none of the above. The answer is: sanitation. At least that's the conclusion of a global survey conducted by the *British Medical Journal* and announced in January. All right, maybe this survey isn't news to people in the water and wastewater business. When such strongly favorable news comes out, those in the profession tend to share it widely — as they should.

Still, it's worthwhile to look at the survey and its results in a little more depth — in part because inadequate sanitation is still a major problem in parts of the world. Professor Johan Mackenbach of Erasmus University Medical Center in the Netherlands observes, "In 2001, unsafe water, sanitation and hygiene

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The Netherlands

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Around the world

The *BMJ* survey attracted responses from all over the world and from different walks of life. Not surprisingly, since *BMJ* is a medical publication, doctors gave the most responses, at 3,198. But the journal also heard from 2,438 members of the public, 1,582 students, 1,144 academic researchers, and others in a wide range of categories.

It is interesting that, in such a diverse group, sanitation came out in first place. In developed countries, we take sanitation so much for granted that it would

be easy to overlook it amid a list of medical miracles.

The fact is, sanitation ranked a clear number one with 1,795 responses — 15.8 percent. That's remarkable in view of the competition (see the accompanying table for the complete results).

It's impressive that in a field of respondents led by physicians and researchers who focus on treating disease, so many remembered the importance of preventing it. Mackenbach noted, "I'm delighted that sanitation is recognized by so many people as such an important milestone. The general lesson, which still holds, is that passive protection against health hazards is often the best way to improve population health."

Erasing a menace

As part of the *BMJ* poll, leading doctors and scientists championed each of the 15 milestones. Mackenbach championed sanitation. Most of us are not old enough to remember how severe a menace poor sanitation was. In his argument in *BMJ* on behalf of sanitation, Mackenbach made a compelling case.

The Industrial Revolution, starting in the 1780s, caused people to congregate in towns and cities, where unplanned growth, poor working conditions, and low wages led to deterioration in public health. "Infectious diseases exacted a huge toll in morbidity

and mortality, among them tuberculosis, diphtheria, measles, smallpox, typhoid, and typhus, as well as the 'enteric fevers,'" Mackenbach wrote.

Pandemics of cholera hit Western Europe in the 1830s, 1850s, and 1860s. A pioneer in sanitation was John Snow, who showed that cholera was spread by water and showed that shutting off a particular pump in London stopped the spread of the disease in that area. Another champion was Edwin Chadwick, who came up with the idea to pipe clean water into homes and to build sewers to carry wastewater away.

Proof in results

The benefits of improved sanitation were substantial and came quickly. "Britain took decades to implement these measures, and they spread only slowly to the rest of Europe, but in the end, they had a major effect on mortality," Mackenbach wrote.



FROM THE EDITOR

Ted J. Rulseh

"In the Netherlands, for example, the first large municipality with piped drinking water was Amsterdam (1854), followed by Rotterdam and The Hague in the 1870s. By the end of the century, around 40 percent of the Dutch people had piped drinking water, and in the early 20th century, sewerage systems covered more than half the population.

"Between 1870 and 1970, age-standardized mortality in the Netherlands fell by almost 75 percent. An important contribution to this decline was a fall in the number of deaths from infectious diseases, including deaths from respiratory tuberculosis (down 15 percent), acute respiratory diseases (11 percent), and acute digestive diseases (8 percent).

Between 1901 and 1970, when a more accurate classification of causes of death was used, a fall in mortality from "diarrhea and dysentery" accounted for 12 percent of the overall decline in mortality in the Netherlands. Similar figures were reported for England and Wales."

Maybe none of this is news to people in the profession. Still, it can only help to be reminded how critically important sanitation is. Things like the results of the *BMJ* poll can help put a little more spring in your step on the way to work. ♦

British Medical Journal Medical Milestones Poll Results

MILESTONE	VOTES	PERCENT
Sanitation (clean water and sewage disposal)	1,795	15.8
Antibiotics	1,642	14.5
Anesthesia	1,574	13.9
Vaccines	1,337	11.8
Discovery of DNA structure	1,000	8.8
Germ theory	843	7.4
Oral contraceptive pill	842	7.4
Evidence-based medicine	636	5.6
Medical imaging (X-rays, etc.)	471	4.2
Computers	405	3.6
Oral rehydration therapy	308	2.7
Risks of smoking	183	1.6
Immunology	182	1.6
Chlorpromazine	73	3.6
Tissue culture	50	0.4