

# Low Back Pain and the Cottrell 90/90 Backtrac<sup>®</sup> System

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## INTRODUCTION

Chained to their jobs, our patients don't exercise regularly. They become weekend athletes for an hour or two of abusive activity. Sinking deeper and deeper into soft mattresses and over-stuffed chairs, they place more and more strain on their backs.

We have created the problem of lower-back pain. As Dr. Kenneth Casy, a pain specialist at the University of Michigan states, "Low-back pain is largely a social problem. It's as much due to the way we live as anything else!"<sup>1</sup>

If back pain is a social problem, it is one about which the American public is not very well informed. Most Americans are still living in a state of innocence about their backs. People do not realize how they are abusing their backs, how they can avoid back problems, why their backs give them trouble, or what can be done to alleviate back pain once they get it.

## STATISTICS

But what about the current back problem? Next to the common cold, low back pain is probably our most common discomfort. About 80 percent of all Americans will have a severe backache sometime during their lives.<sup>2</sup> What about the 75 million Americans who have back problems

now, and the additional 7 million who will be added to the back patient rolls each year?<sup>3</sup> What do we receive for the \$5 billion a year we spend on tests and treatments for back ailments?<sup>4</sup> Can we reduce the \$12 to \$20 billion we pay in disability claims, lawsuit awards, and other settlements resulting from back injuries?<sup>5</sup>

There are other costs, not measured in dollars, which back pain extracts. The number one disabler in the United States is chronic pain, and the most common chronic pain syndrome is lower back pain.<sup>6</sup> The National Center of Health Statistics claims that of the 75 million Americans who suffer from chronic pain, 23 million have back pain.<sup>7</sup> We know that in the United States 93 million workdays are lost each year because of back problems, but what of the emotional and personal costs of lower-back pain? A study conducted by Johns Hopkins Medical Center revealed that 70 percent of chronic pain sufferers go through divorce and 20 percent contemplate or actually attempt suicide.<sup>8</sup>

## PROBLEM DEFINITIONS

What is this pain we are describing? How is it being diagnosed? Isn't the patient's uncertainty over his or her condition related to our own uncertainty in diagnosing and treating their lower back

pain? Most physicians will admit that low-back pain is a very confusing and frustrating disease to treat. Objective findings on low-back pain are random, uncertain, and debatable. X-rays are not very helpful in diagnosing low-back pain because approximately 25 percent of the population exists comfortably with abnormal vertebrae.<sup>9</sup> A complete lack of controlled clinical trials on various treatments of low-back pain has allowed the controversy to continue.

The causes of low-back pain remain rather muddled. Throughout the past 100 years various causes for low-back pain have been proposed. We have focused on the sciatic nerve theory and the sacroiliac joint theory. Faulty body mechanics, the disc theory, and muscle spasms are other explanations for low-back pain. It is believed that 80 percent of lower-back pain is caused by overworked muscles, a herniated or ruptured disc, or the facet-joint syndrome.<sup>10</sup>

Today we place greater emphasis on holistic health, on treating the patient as an entity of mind and body. We also find the renewed emphasis on psychoneurosis and the "pain personality" as explanations for the prevalence of low-back pain among specific types of persons.

The causes of low-back pain are so numerous that giving a specific diagnosis remains difficult, if not impossible. As Orthopedist Edwin Guise of Henry Ford Hospital, physician for the Detroit Lions, says: "You have to think of everything from poor posture to cancer."<sup>11</sup> New techniques, such as computed tomographic scanning, have improved the diagnosis of conditions such as lateral or central spinal stenosis, which are not readily identified by myelography. Incomplete initial diagnosis, however, remains a problem in treating the lower back. A lower-back patient may very well encounter varying diagnoses if he visits more than one physician.

In the last twenty years we have found, in addition, that we cannot treat the patient with back problems in isolation. We have realized the immense potential for self-abuse which lies in treating the lower-back

patient. Physicians, physical therapists, nurses, and orthotists alike are faced with the potential of malpractice litigation. Concerned for his or her patient, the health care provider is surrounded by the negative feelings and cynicism of some insurance carriers, attorneys, employers, and even patients themselves. The patient's own health and well being may be pushed aside by any one of the actors in the low-back pain scenario who are looking out for their own narrow self-interest.

Increasing government intervention in the treatment of the patient, in this case those who suffer from low-back pain, has increased the burden of documentation, while calling for decreased use of acute care facilities. High quality patient care is, however, demanded as well.

Our concern for the back patient is also diverted more and more these days by increasing costs. Which drugs, fixation devices, and diagnostic procedures should we use in treating the patient? Today our choice is often shaded by the economy. This trend could very well hamper the development of new techniques and therapeutic measures.

The strains and stresses of modern living have created patients who suffer from psycho-social dysfunctions, as well as from organic disease. We find ourselves ill-prepared to deal with such patients. How do we relate to a pain-ridden, drug-dependent back patient and motivate him or her to tolerate pain in another, less destructive fashion? How do we motivate a low-back patient whom we suspect of malingering to return to work and a productive life?

In general, we are dedicated to the delivery of high quality care to our patients. It is important for us to feel confident that an accurate diagnosis has been made and that correct treatment has been prescribed. We wish to serve our patient well.

More specifically, we want to provide the patient with relief from pain and restore range of motion, muscle strength, and balance. We want our patients to get well and then stay well. And so we provide training, a maintenance fitness program, and consider the patient's personal adjustment to his back pain. We suggest



weight reduction if it's necessary because we know that a sagging pot belly weighing 10 pounds puts 100 pounds of weight at the disc.

## CONTEMPORARY TREATMENT

Current treatments for lower-back pain now include rest, traction, applications of heat and cold, self-hypnosis, and nerve blocks, steroid injections, biofeedback, electrical stimulation, orthoses, and psycho-therapy.

Today we know that up to 90 percent of all backaches go away within a few weeks no matter what therapy is used.<sup>12</sup> Active treatment, however, may speed healing. When a patient calls complaining about lower-back pain, one physician automatically suggests bedrest for four days. The physician makes an appointment only if the patient has not substantially recovered during that time. Only two or three percent of all low-back patients require surgery.

The majority of patients having back surgery do well, and there are many of them. For example, 200,000 laminectomies are performed in the United States each year.<sup>13</sup> However, it has been variously estimated that the failure rate on back surgery remains between ten percent and 40 percent. After surgery ten to 30 percent of back patients are pain free; 75 percent are improved, but still have some pain; and ten to 20 percent have not been helped at all by their surgery.<sup>14</sup>

## A NEW ALTERNATIVE

Additionally, new, non-invasive modes of treatment for lower-back pain have been developed. A new approach to back pain is the Cottrell 90/90 Backtrac® system which has dramatically shortened hospital stays and reduced the need for surgery. The cost of the entire system is less than the cost of one day in the hospital. Primarily a home-care system, the patient is directly involved in his or her own care.

Backtrac® works by flattening the lumbar spine and reducing the lumbar curve. It

simply and effectively achieves anterior pelvic tilt. Pelvic tilt tends to elongate the lumbar intervertebral disc spaces, which reduces pressures on any herniated disc. By stretching the lumbar paraspinal musculature, this system also provides relief from spasm.

The "90/90 position" decreases or eliminates the pain of acute lumbar disc protrusion. It is indicated for use in treating muscle spasms, overstretched or tearing ligaments, back sprains and strains and some facet syndrome patients. It is also suitable for pregnant and obese patients.

## PHYSICAL EXAMINATION

The "90/90" test performed during a routine back examination can indicate strongly whether a patient will benefit from Backtrac®.

The physician singly lifts up on the calves of the patient exerting a vertical force (Figure 1). Many times the patient, who at that moment is having back pain, will indicate a sense of relief. As the calves are released, the back pain may reoccur. The test also tends to separate functional from organic back problems. Functional patients may say the test makes them feel worse or are noncommittal. A positive "90/90" test indicates a favorable prognosis for treatment in the Backtrac® system.

## DESCRIPTION OF COMPONENTS AND USAGE

The Backtrac® system for clinic or home use (Figure 2), consists of a collapsible, lightweight A-frame and an easily-applied, single pull pelvic belt. The specially designed belt fastens between the legs to an overhead pulley clamp and locking device on the A-frame. This achieves the direct 90 degree upward pull on the pelvis. The patient's own weight provides the pull to produce the degree of pelvic tilt. Placement accessories, the cervical thoracic wedge, the knee bolster and add-pad, insure proper positioning for the patient.

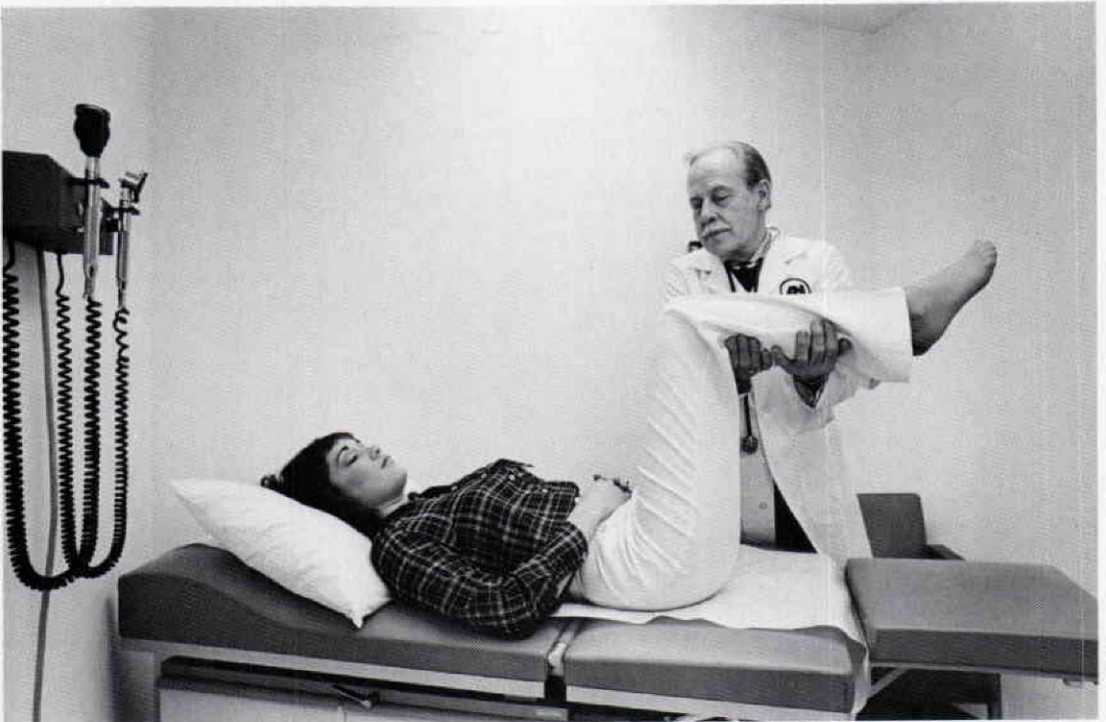


Fig. 1. Physician lifts calves, exerting vertical force.

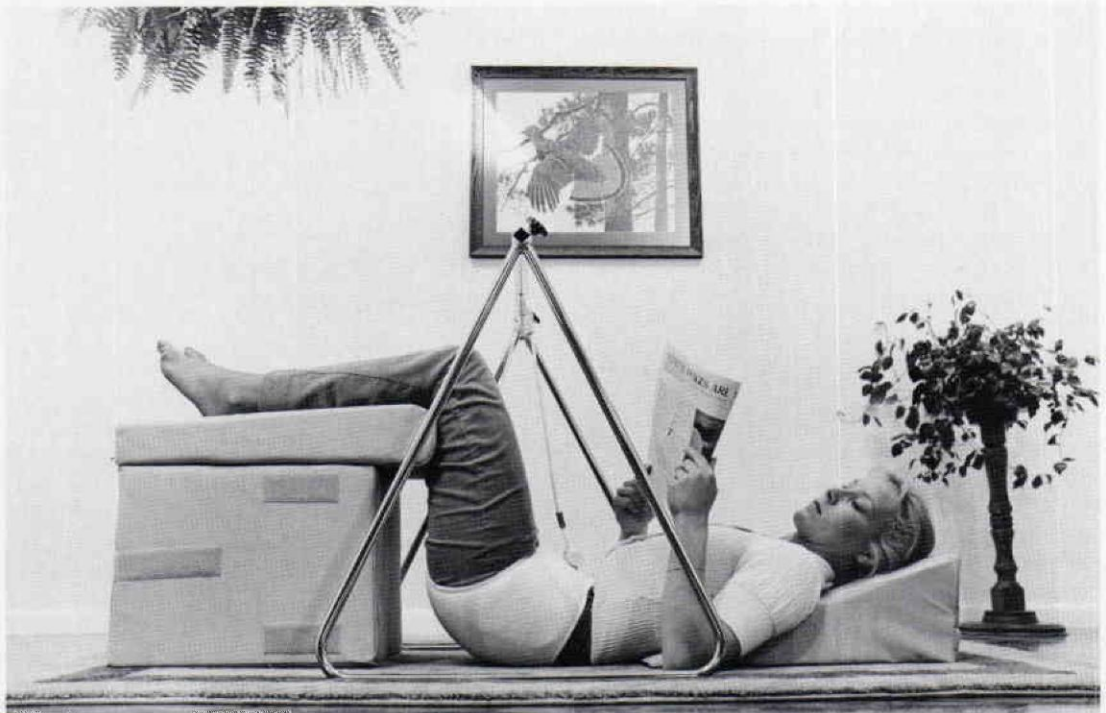


Fig. 2. Backtrac® system for clinic or home use.





Fig. 3. Backtrac® overhead pulley clamp locking device.

The acute contained herniated lumbar disc patient or those with severe strain should always be admitted as an in-patient should be placed on complete bed rest. Traction in Backtrac® is achieved by using the hospital bed modified with an overhead pulley clamp locking device (Figure 3), and with a single pull pelvic belt and the positioning accessories, also shown. On the first day of treatment, the patient's tolerance should dictate the length of involvement in Backtrac®. Four sessions could be scheduled per day with the actual initial session lasting only 15–20 minutes. Each session should be extended by five to ten minutes over the previous one. Eventually the four hour-long sessions are scheduled daily but always to the patient's tolerance. Once the patient is discharged from the hospital, Backtrac® sessions continue at home. Always start the patient slowly with initial sessions only ten to 20 minutes long. For patients with chronic recurring back problems the neck petal (Figure 4), should be used initially for cervical positioning instead of the wedge. Gradu-



Fig. 4. Backtrac® neck petal for cervical positioning.

ally increase the length of the session by five or ten minutes, four times a day, so that the final session is an hour long. Patients continue at home with the A-frame, belt and positioning accessories under the physician's direction, usually for three to four months, but always depending on need and diagnosis.

## RESULTS

Backtrac<sup>®</sup> has already helped thousands of back patients return quickly to normal, active lives. It has reduced dramatically the need for surgery.

An x-ray study (Figure 5) illustrates a patient's spine while lying supine without Backtrac<sup>®</sup> traction (top half) and then showing the same patient in Backtrac<sup>®</sup> (bottom half). The figure clearly illustrates that the lumbar curve is reduced and the back flattened. Another x-ray study (Figure 6), presents a patient supine without traction with an old lumbo-sacral fusion; in Backtrac<sup>®</sup> the lumbar curve is again reduced.

Yet another study using a myelograph depicts a patient standing in extension (Figure 7). After Backtrac<sup>®</sup> traction the reduction is observed, (Figure 8), and the patient is pain free.

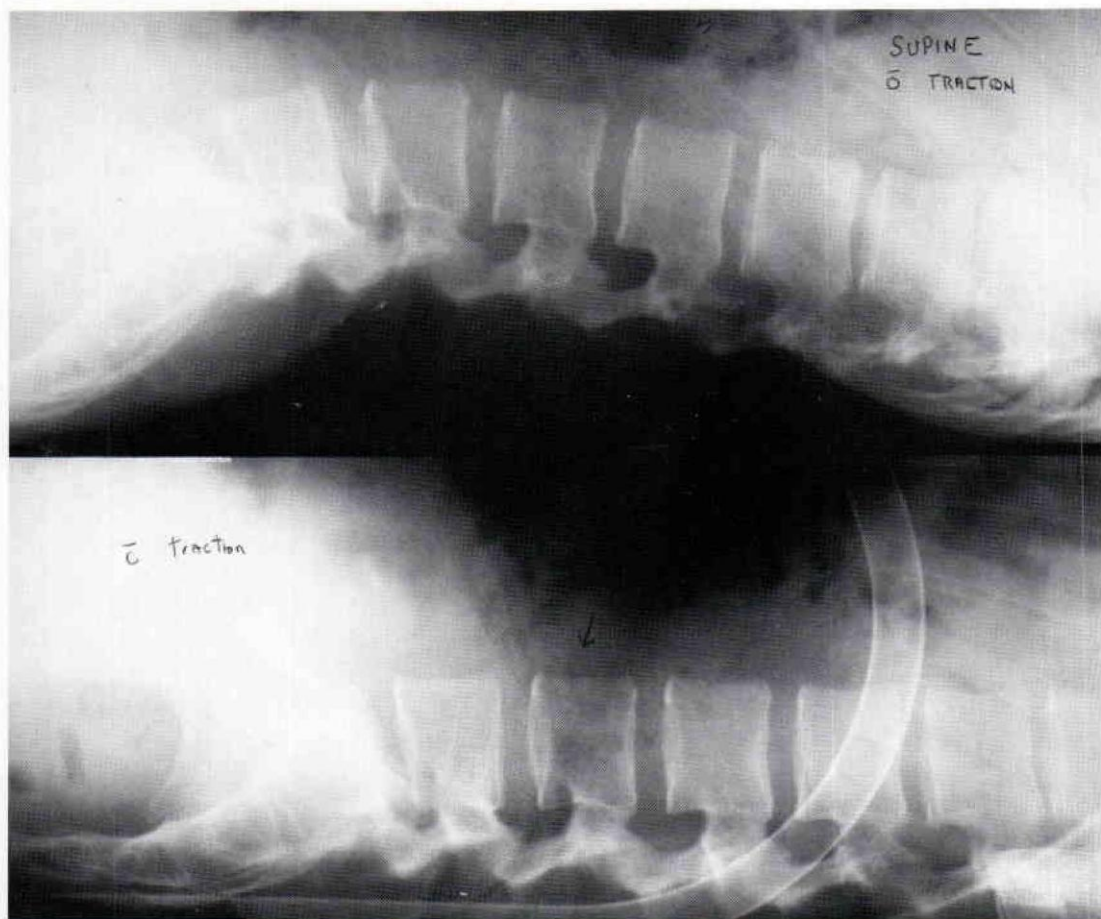


Fig. 5. (Top) Patient lying supine without Backtrac<sup>®</sup>. (Bottom) Patient in Backtrac<sup>®</sup> traction.



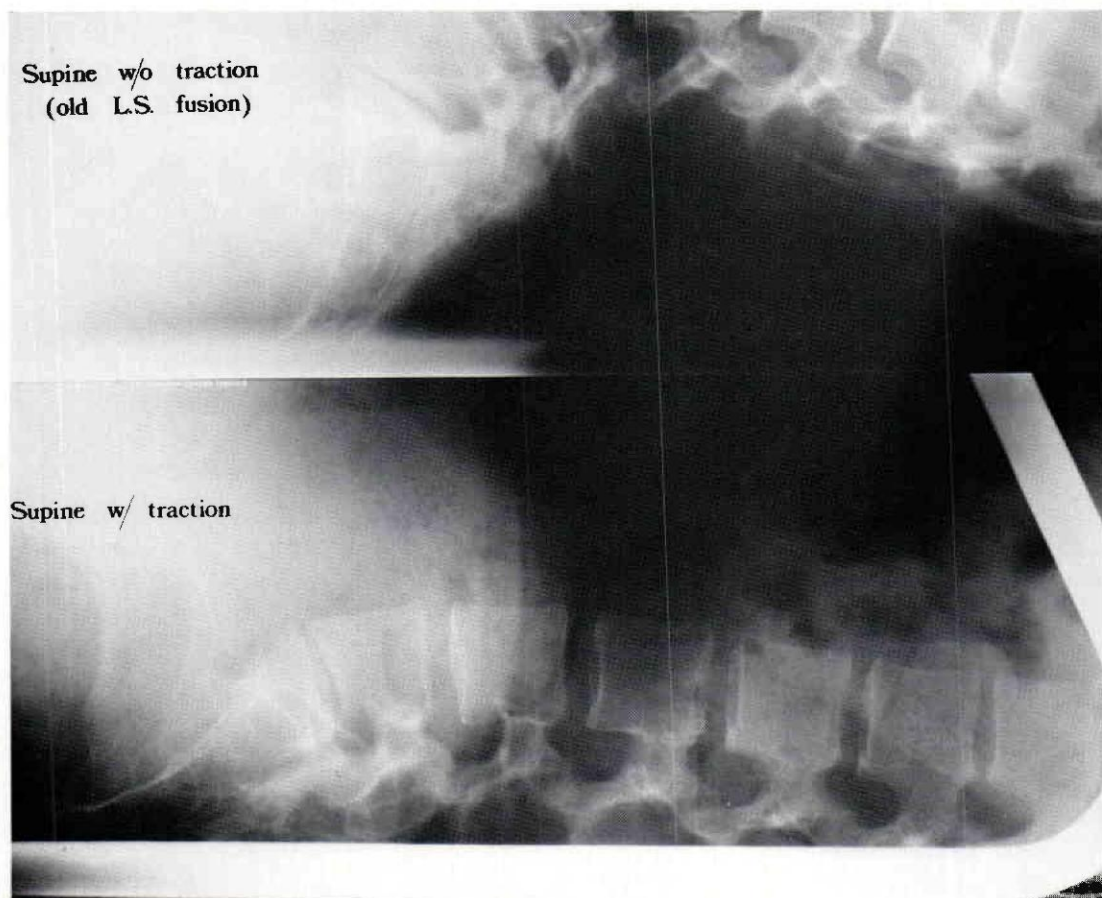


Fig. 6. (Top) Patient supine without traction with an old lumbo-sacral fusion. (Bottom) Patient in Backtrac® traction.

## DISCUSSION

Today we are beginning to realize the effect which emotions, attitudes, thoughts, and behavior patterns have on the body, and on the back specifically. We are considering the total patient and his or her diet, work, residence, relationships, feelings, and level of exercise. We are not suggesting that all disease is caused by the mind. We do, however, believe that there

can be emotional and mental causes of disease, as well as physical, nutritional, and chemical ones. Some back specialists have suggested that in as many as 80 percent of all cases, back pain is not due to an organic problem, but to such elusive factors as stress, worry, and other mental attitudes. For those other patients for which an actual mechanical cause can be determined and who meet the indications stated here, the Cottrell Backtrac® has proven effective.



Fig. 7. Patient standing in extension.

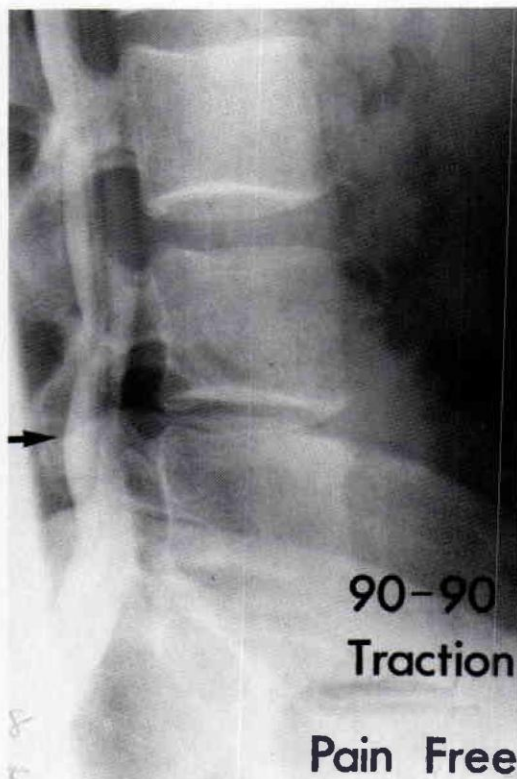


Fig. 8. After Backtrac® traction, the reduction is observed.

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- <sup>5</sup>Clifford P. Bendau, "Breaking the Grip of Pain," *Minneapolis-St. Paul*, November 1980. Hereafter cited as *Mpls.-St. Paul*.
- <sup>6</sup>*Mpls.-St. Paul*.
- <sup>7</sup>*Mpls.-St. Paul*.
- <sup>8</sup>*Mpls.-St. Paul*.
- <sup>9</sup>James R. Swenson, "Low Back Syndrome," unpublished paper, 1979.
- <sup>10</sup>*Time*.
- <sup>11</sup>*Time*.
- <sup>12</sup>*Time*.
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