

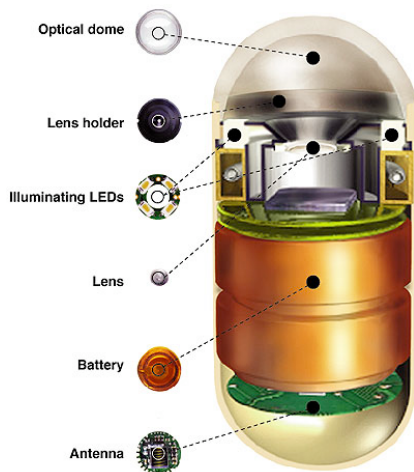
Mouth to Anus Capsule Endoscopy

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The Mouth to Anus Capsule Endoscopy (M2A CE) was developed in order to get a better look at the small intestine. Endoscopies and colonoscopies did not reach far enough to examine this area of the gastrointestinal tract. However, the uses for the M2A CE are not limited to simply examining the small intestine.

The patient swallows the M2A CE using water and being 11mm by 26 mm it can travel painlessly through the gastrointestinal tract via the peristaltic movements. The capsule is made of plastic and the insides consist of batteries, four light emitting diodes, a lens, and a transmitter. The batteries keep the camera running so it can take 2 pictures per second, and the LEDs illuminate the gastrointestinal tract. The transmitter sends the color pictures to the recording system in the belt (which the patient wears while the camera pill travels through their gastrointestinal tract).

The patient must refrain from eating after midnight prior to the procedure. During the eight hour long procedure the patient may carry out daily activities. The capsule usually spends about one hour in the gastric part of the gastrointestinal tract and about three to four and a half hours in the small intestine. The remainder of the time the capsule travels through the large intestine and exits through the anus. Once the capsule exits the body it is no longer needed. The belt contains all information needed for the doctor to view the pictures captured (This will take the doctor two hours to do so).



The M2A CE was developed by Given Imaging, Ltd. and received FDA approval in August 2001.

The M2A CE is used mostly to examine the small intestine for intestinal bleeding but can be used to identify celiac disease as well as polyps within the intestine. Esophageal diseases can also be identified using the capsule.

The M2A CE has a 60% to 70% accuracy rate compared to other ways that were only 30% to 40% accurate in finding small intestine problems. The problems that the M2A CE has is that the pictures make it difficult to identify the exact location of the problem. The camera also only has a 140° field of view meaning that only 70% of the intestine is captured in the pictures.

Improvements on the camera pill have included the addition of Rapid software that creates a graphical representation of the small intestine for easier location of gastrointestinal bleeding. Some improvements that researchers are working on is the addition of a laser to the capsule so that the lesions can be treated as soon as they are spotted by the camera.

The Sayaka Endoscope is also a huge improvement to the M2A CE. It can get a 360° view of the intestine and takes 30 pictures per second making the pictures viewable as a video. It does not require batteries and gets its power via conduction from the vest the patient wears that collects the recorded data. The Sayaka Endoscope is also cheaper at \$100 versus the \$450 cost of the M2A CE (the overall procedure of the M2A CE totals a cost of \$1200).

Bibliography:

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