

UW-Madison Invention Disclosure Report Date:
WARF Case No.

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If you have questions about completing this document contact your WARF Intellectual Property Manager, 263-2500 or Sarah Castello, UW Graduate School, 263-2877. Please distribute copies to all individuals who worked on this invention as identified in the inventor information section of this document.

Invention Summary

Title of invention:
MR Compatible Spirometer

Technical abstract of the invention (or attach a publication or draft). This will be provided, when required, to sponsoring agencies.

Abstract

Background: An MR compatible spirometer was designed to aid in neuroradiology research to understand the pathophysiology of Chiari I malformations. The goal was to determine if the Valsalva maneuver, which causes headaches in Chiari I patients, exacerbates the CSF flow abnormalities. Methods: To determine the effect of a Valsalva maneuver on CSF flow, MR images are acquired with the subject breathing normally and performing a Valsalva maneuver. For the latter, the subject breathes through the MR compatible spirometer. The device consists of a tube with attached mouthpiece and a compressed air/vacuum controlled valve. The Valsalva maneuver is performed by instructing the subject to breathe out through the spirometer and closing a valve in the airway to raise intra-thoracic pressure. The actual pressure achieved by the subject is recorded by means of the spirometer. The changes in CSF flow are monitored by MR and compared with the pressure changes. Six healthy subjects breathed through the spirometer and then forcefully blew against the closed valve to test the device. Results: In the six subjects, an increase in intra-thoracic pressure for 30 seconds was achieved in each subject. The pressure increases ranged from 42 to 89 mm Hg. Conclusions: The new MR-compatible spirometer facilitates the performance of a Valsalva maneuver and monitors the magnitude of the Valsalva maneuver achieved.

Please see attached draft for full description of the device

What makes this invention superior to existing technology?

While other devices are commercially available which measure airway pressure, no other devices currently on the market are compatible with the MR environment.

The invention was conceived of at least as early as:

September 2005

When was the invention shown to work?

December 2005

Have you disclosed this invention to anyone in a non-confidential manner?

If so, when and to whom?

If not, do you anticipate such a disclosure in the next six months (when and to whom)?

Our prototype and preliminary test results were on display at a poster session for the UW Biomedical Engineering Department on December 9, 2005. This session was attended by undergraduate biomedical engineering students at UW as well as BME professors and project clients.

Inventor Information

Names of Inventors: Please include the names of all University of Wisconsin and any non-University personnel who contributed to this invention.

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Is any inventor employed by or affiliated with:

	Yes	No
USDA		X
USDA/Forest Products Lab		X
Veterans Administration		X
UW Hospitals and Clinics	X	
Howard Hughes Medical Institute		X
Any organization or company other than the UW Madison		X

Funding and Materials

To look up your funding sources see <http://www.rsp.wisc.edu/services/admin/awards.cfm>

A grant, contract or cooperative agreement is a source of funds if the invention was conceived or reduced to practice in the performance of work sponsored by the funding agreement.

Which federal funds (144-accounts) contributed to making this invention?

***Private Funding only was used to make this invention.**

	Sponsoring Agency	Grant, Contract or Agreement Number	UW Account Number
Primary	N/A		144-
Secondary	N/A		144-

(expand as needed for more sources)

Which non-federal funds contributed to making this invention?

Sponsoring Agency	Grant, Contract or Agreement Number	UW Account Number
Private funding only		

(expand as needed for more sources)

Check if any other agreements are relevant to this invention (list):

Check Here	Agreement Type	Other parties to agreement, and description of agreement
<input type="checkbox"/>	Material transfer agreement	
<input type="checkbox"/>	Confidentiality agreement	
<input type="checkbox"/>	Collaboration agreement	
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<input type="checkbox"/>	Consortia agreement or funding	
<input type="checkbox"/>	Consulting agreement	
<input type="checkbox"/>	Other	

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