



Computer Program to Quantify Pharyngeal Residue after Swallowing (VA Reference No. 04-118)

Novel software program that quantifies pharyngeal residue for diagnosis, treatment, and/or research of dysphagia conditions

Technology

Software program for measuring pharyngeal residue

Inventor

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Key Features

- Quantifies pharyngeal residue
- Doesn't require a patient to ingest radioactive materials
- Enable standardization of dysphagia testing
- Can be used for research, diagnosis, and/or treatment purposes

Stage of Development

Reduced to practice with software system developed

Field

- Diagnostic
- Software
 - Dysphagia
 - Pharyngeal Residue
 - Aspiration

Patent Status

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Technology

The Department of Veterans Affairs has developed a software program that compares digital videofluorographic (X-ray) images of the head and neck before and after a swallow to determine the quantity of food not swallowed.

Description

The program developed utilizes pixel intensities in bolus and residue image areas of a patient X-ray for the purpose of quantifying pharyngeal residue and aspiration. Baseline images of the head and neck and a pre-swallow digital image of a bolus are compared to a post-swallow digital image of residue and aspiration. Based upon the physics of X-ray imaging, the program calculates the ratio of the volume of the residue and aspiration to the volume of the original bolus. These ratios are then a good indication of the patient's swallowing efficiency with the volumes of the pharyngeal residue and aspiration calculated from these ratios.

Competitive Advantage

Currently, clinicians and researchers in the area of swallowing disorders have not been able to validly or reliably quantify pharyngeal residue or aspiration after swallowing. Prior methods are subjective and therefore unreliable as to how much residue remained in the pharynx or how much of the bolus entered the trachea (prandial aspiration). For example, it is not known how much pharyngeal residue is clinically significant, or if one location of residue versus another places a person at greater risk for aspiration or reduced nutrition.

This invention:

- Enables researchers and practitioners to quantify pharyngeal residue with an image of physiological features and without ingestion of radioactive material.
- Enables standardization of dysphagia testing, allowing clinicians to assess treatment efficacy.
- Will allow for the development of operational definitions for mild, moderate, severe amounts of pharyngeal residue and aspiration.

Status

The Department of Veterans Affairs is looking for a partner for further development and commercialization of this technology through a license, and the VA inventors are available to collaborate with interested companies through a Cooperative Research and Development Agreement (CRADA)