

BEDSIDE NONINVASIVE IMAGING TEST TO ASSESS KIDNEY FUNCTION

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Value Proposition: *Method that uses ultrasound to detect functional nephron number in the kidneys.*

Technology Description

Current clinical markers of kidney health (serum creatinine and estimated glomerular filtration rate (eGFR)) are insensitive to the early progression of kidney disease and cannot determine functional nephron number.

Researchers at Washington University in St. Louis have developed a technique using ultrasound imaging to assess kidney autoregulatory function and detect changes in hemodynamic oscillations that sensitively reflect kidney function and nephron number.

This process provides an inexpensive, sensitive, bedside, individualized assessment of kidney function, that is not reflected in current clinical metrics, and with the potential to guide and monitor interventions, facilitate transplant allocation, and stratify patients for clinical trials of new therapies. It allows healthcare professionals to detect early alterations in physiology that are associated with diseases at their onset and during early progression.

Stage of Research

Proof of concept. Demonstrated that nephron autoregulation can be detected in human kidney.

Publications

Charlton JR, Xu Y, Wu T, deRonde KA, Hughes JL, Dutta S, Oxley GT, Cwiek A, Cathro HP, Charlton NP, Conaway MR, Baldelomar EJ, Parvin N, Bennett KM. Magnetic resonance imaging accurately tracks kidney pathology and heterogeneity in the transition from acute kidney injury to chronic kidney disease. *Kidney Int.* 2021 Jan;99(1):173-185. doi: 10.1016/j.kint.2020.08.021. Epub 2020 Sep 8. PMID: 32916180; PMCID: PMC8822820.

Applications

- Assessment of kidney function
- Early detection of disease progression

Key Advantages

- Bedside, noninvasive assay
- Inexpensive, and can be used and performed anywhere
- Utilizes existing ultrasound transducers

Patents

Patent application filed

Related Web Links – [Kevin Bennett Profile](#); [Bennett Lab](#)