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## RESEARCH & DEVELOPMENT CONFERENCE 2025

### POSTER PRESENTATION 28:

Exploring the Viability of an AI Speech-Based Diagnostic Tool in Parkinson's Disease.

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#### Introduction:

Parkinson's Disease (PD) is the world's fastest-growing neurodegenerative disorder. Traditional assessment methods for PD progression are largely subjective and poorly suited for early detection in community settings. Speech—known to reflect early PD-related changes—offers a promising, objective digital biomarker. Yet, the viability of deploying speech-based diagnostic tools in integrated community care remains unexplored.

#### Aim:

To identify the essential requirements for implementing an AI speech-based diagnostic tool for monitoring disease progression in Parkinson's Disease within an integrated health and social care setting.

#### Methodology:

A mixed qualitative design was adopted using surveys (n=31), focus groups (n=12), interviews (n=11), and document review. Participants were frontline NHS and social care staff in Bridgend's integrated community teams. Data were thematically analysed using grounded theory supported by Delve software. A policy document—the Digital and Data Strategy for Health and Social.

#### Results:

Four core implementation themes with nine subthemes were identified:

1. Essential Requirements – Reliability, ease of use, and digital readiness.
2. Workforce Needs – Training, support, and transparency in AI decision-making.
3. Patient-Centred Design – Respect for preference, privacy, and ethical safeguards.
4. System Readiness – Interoperability, cost considerations, and pathway fit.

Clinicians welcomed a speech-based solution as an adjunct to clinical decision-making, provided it is co-designed with users and supported by ethical and data governance frameworks.

#### Conclusion:

Speech-based tools hold strong potential to address gaps in timely PD monitoring, supporting anticipatory care and integrated community delivery. By embedding user-centred co-design, digital skills training, and robust AI transparency, such innovation can transform how progressive neurological conditions are managed. Findings directly align with *A Healthier Wales* and the Welsh Government's Digital and Data Strategy.