

# The continued evolution of exceptional deep-learning-based MR imaging



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MR imaging is a dynamic field that is constantly evolving, with new applications and imaging markets emerging. Some of these applications come with substantial technical challenges, such as cardiac imaging, which has traditionally been challenged by phase artifacts and the need for rapid image acquisition. Deep-learning reconstruction methods, such as AIR™ Recon DL, have helped to increase spatial resolution, while allowing for shorter image acquisition times. Beyond AIR™ Recon DL, Sonic DL™ is GE HealthCare's latest and most rapid MR acceleration technique that can achieve substantial reduction in scan time of cine acquisitions in cardiac imaging – up to 83% versus a fully sampled acquisition. In this issue of SIGNA™ Pulse of MR, Dr. Makoto Orie from Iwate Medical University in Japan relates his initial experience with Sonic DL™ Cine for evaluating ventricular function in the expanding market of cardiac MR. Dr. Melany Atkins from Fairfax Radiological Consultants in the US also discusses the impact of Sonic DL™ in cardiac cine acquisitions in evaluating patients with cardiac dysrhythmias.

Another emerging market in MRI is MR neurography, which provides visualization of peripheral nerves that have not been previously studied due to their small size. Also in this issue, my colleagues, Drs. Darryl Sneag and Ek Tsoon Tan at the Hospital for Special Surgery in New York, discuss the challenges and substantial impact of MENSA NERVE, a new non-contrast MR neurography technique from GE HealthCare that provides high spatial resolution peripheral nerve MR imaging while suppressing confounding signal from vasculature. They present remarkable imaging of the lumbosacral and brachial plexus and small peripheral nerves in the extremities and facial region. This imaging has challenged the traditional dogma of a “diagnosis of exclusion,” now demonstrating inflammatory constrictions in certain conditions. They demonstrate how MENSA NERVE can provide superior sharpness compared to

traditional techniques such as 3D Cube fast spin echo for high spatial resolution, isotropic acquisitions (0.6-1 mm).

Similarly, Dr. Mario Padrón from Clínica CEMTRO in Spain discusses the importance of AIR™ Recon DL for 3D and PROPELLER acquisitions in complex exams such as peripheral nerve imaging. The combination of AIR™ Recon DL with 3D and PROPELLER acquisitions permits reduction in scan time without sacrificing image quality, important for pediatric and fetal applications. Queen Silvia Children's Hospital in Sweden utilizes AIR™ Recon DL with both 3D and PROPELLER to improve patient comfort, while reducing scan time and minimizing motion artifacts in pediatric imaging. At Quirónsalud Madrid University Hospital, the combination of AIR™ Recon DL and AIR™ Coils enables the depiction of small lesions in the bowels and prostate while the 48-channel head coil and AIR x™ assists with the detection of a dual pathology in the pituitary gland.

In this issue, including the exclusive online-only content, you can read how Kobe University Hospital in Japan has applied AIR™ Recon DL for imaging pregnant subjects in the left lateral position and how Lovelace Women's Hospital in the US, one of the first to upgrade from 60 cm to 70 cm bore size with SIGNA™ Artist Evo, has reduced scan time while improving spatial resolution in high-risk breast imaging cases. In this issue – both in print and online – many newer applications of these techniques are demonstrated and will highlight the importance of maintaining image quality while maximizing scanner efficiency. 