“This study evaluated the effect of intravenous (IV) catheter gauge size on catheter placement, contrast infusion, and image quality for patients undergoing IV contrast-enhanced multidetector computed tomography (MDCT).” Johnson et al (2014).

Reference:

Effect of intravenous (IV) catheter gauge on contrast infusion and image quality
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Abstract:

PURPOSE: This study evaluated the effect of intravenous (IV) catheter gauge size on catheter placement, contrast infusion, and image quality for patients undergoing IV contrast-enhanced multidetector computed tomography (MDCT).

MATERIALS AND METHODS: One thousand consecutive adult outpatients undergoing IV contrast-enhanced MDCT and 10 IV insertion CT nurses were observed from IV catheter selection through IV removal. Patients’ demographics, number of sticks required, catheter gauge during each attempt, time for catheter placement, IV nurses’ assessment of vein quality and contrast infusion parameters were recorded. Scan quality was assessed subjectively.

RESULTS: Subjects included 547 men and 453 women, with a mean age 59.2 years (range, 19-92 years). Median number of catheter attempts was 1 per patient (range, 1-9). Catheters were successfully placed in 98%. First and final catheters were most commonly 20 gauge (59% and 56%, respectively), followed by 22 gauge (34% for both), 18 gauge (6% for both), and 24 gauge (2% and 3%, respectively). Mean infusion rate correlated with catheter gauge:
5.3 mL/s for 18 gauge; 3.5 mL/s for 20 gauge; 2.3 mL/s for 22 gauge; and 1.7 mL/s for 24 gauge (P < 0.0001). Target infusion rate of ≥ 3 mL/s was related to catheter gauge (100% of 18 gauge, 71% of 20 gauge, 11% of 22 gauge, and 0% of 24 gauge; P < 0.0001). Nine hundred sixty-eight subjects underwent imaging. Most of the CT examinations (935/968 [97%]) were of acceptable quality.

CONCLUSION: Experienced IV starters usually achieve IV access in one attempt by tailoring IV catheter gauge to vein quality; however, target infusion rates are not likely to be achieved with 22- and 24-gauge catheters, used in nearly 1/3 of the patients in this study.

Other intravenous and vascular access resources that may be of interest (External links – IVTEAM has no responsibility for content).