from 156 to 219 physicians and median payment increased from $4,327 to $5,419.

Conclusions: Total consulting fees to interventional radiologists increased between 2014 and 2018 by 65%, driven both by increased number of physicians paid consulting fees and increased average payment amount.

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**Abstract No. 106**

**Long-term renal function outcomes following cryoablation complicated by hemorrhage requiring angioembolization**

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**Purpose:** To determine long-term renal function outcomes following renal cryoablation complicated by hemorrhage requiring post-ablation transarterial embolization

**Materials and Methods:** A retrospective review identified 23 patients who underwent CT-guided renal cryoablation complicated by hemorrhage requiring ipsilateral transarterial embolization (TAE) and a control group of 23 patients who underwent uncomplicated renal cryoablation matched by age, gender and nephrometry score at a single institution from 2005 to 2019. Primary outcome parameters included change in creatinine (mg/dL), estimated glomerular filtration rate (mL/min/1.73 m²; eGFR) and chronic kidney disease (CKD) stage from baseline to most-recent follow-up. Overall survival was estimated using Kaplan-Meier method.

**Results:** There was no significant difference in baseline age (P = 0.75), gender (P = 0.76), median nephrometry score (8 v. 8; P = 1.0), Charlson co-morbidity index (7.0 ± 3.0 v. 5.8 ± 2.3; P = 0.13), creatinine (1.0 ± 0.4 v. 1.1 ± 0.3; P = 0.56), eGFR (56.9 ± 7.9 v. 57.9 ± 4.6; P = 0.60) or CKD stage (P = 0.85) between the TAE and control group. There was a significantly higher proportion of patients on pre-ablation anticoagulation in the TAE v. control group (30% v. 4%; P = 0.047), but all patients were off anticoagulation and with normal coagulation parameters at the time of cryoablation. No significant difference in cryoablation parameters between the TAE and control group including number of cryoprobes (P = 0.72), freeze-thaw duration (P = 0.37) or ice-ball fracture (P = 0.49). Most bleeding was detected at immediate post-ablation imaging (70%) and patients underwent TAE of 1 (61%), 2 (26%) or 3 (13%) renal artery branches, predominantly 3rd or 4th order branches (83%) with 100% technical success. At a mean follow-up of 42.7 months, there was no significant difference between the TAE and control group in creatinine (1.3 ± 0.8 v.1.2 ± 0.3; P = 0.68), eGFR (52.6 ± 13.2 v. 54.2 ± 8.2; P = 0.60) or change from baseline in creatinine (0.3 ± 0.6 v. 0.1 ± 0.2; P = 0.28), eGFR (-4.3 ± 10.0 v. -3.7 ± 6.1; P = 0.80) or CKD stage (22% v. 30%; P = 0.74). Median overall survival was significantly longer in the control v. TAE group (53.5 months v. not reached; P = 0.005).

**Conclusions:** Selective transarterial embolization for post renal cryoablation hemorrhage does not significantly affect long-term renal function compared to cryoablation alone. Pre-ablation anticoagulation despite normal coagulation at time of ablation may be a risk factor for post-ablation hemorrhage and warrants further evaluation when considering pre-ablation embolization.

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**Abstract No. 107**

**Practice patterns of interventional image-guided percutaneous biliary procedures in Medicare beneficiaries**

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**Purpose:** To evaluate national trends in percutaneous image-guided biliary interventions in the Medicare population

**Materials and Methods:** Medicare Part B Physician/Supplier Summary Files were evaluated from 2016 to 2018. Fifteen separate codes including percutaneous cholecystostomy, cholangiogram, placement and exchange of internal and external biliary catheters, biliary stent placement, balloon dilation, endoluminal biopsy and removal of debris or calculi were reviewed. Diagnostic cholangiogram codes were excluded from initial analysis to avoid redundant procedure coding. Procedures were evaluated for total yearly volume, specialty, and location of procedure performed.

**Results:** A total of 121,769 interventional biliary procedures were billed over the three-year period. Three procedures accounted for the majority of procedure volume: 14,679 biliary catheter exchanges (36.2%), 12,576 percutaneous cholecystostomies (31.0%) and 4,933 (12.2%) placements of internal-external biliary drainage catheters were performed on average each year. For every placement of a biliary catheter, an average of two exchanges per year were performed. One of every four biliary catheters was removed under fluoroscopy. Taking cholangiography codes into account, radiologists performed 96.8% of procedures while advanced practitioners performed only 1.1% of procedures. 96.6% of procedures were performed either in an inpatient or outpatient hospital setting.

**Conclusions:** Biliary catheter exchange, followed by percutaneous cholecystostomy and placement of internal-external biliary drainage catheters account for nearly four of five biliary procedures performed. Radiologists primarily are primarily performing these procedures in either inpatient or outpatient hospital setting.

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**Abstract No. 108**

**Pilot randomized controlled trial of endovascular coils and vascular plugs for proximal splenic artery embolization in high-grade splenic trauma**

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**Purpose:** Proximal splenic artery embolization (pSAE) is used for non-operative management of high-grade splenic injuries, most often using endovascular coils (EC) or vascular plugs (VP). It is not known which device is superior. The purpose of this pilot trial was to evaluate the feasibility of enrolling patients in a randomized controlled trial (RCT) comparing these devices, and to collect data to inform the design of a larger clinical effectiveness trial.

**Materials and Methods:** Single-center, prospective, RCT of patients with Grade 3-5 splenic injuries selected for non-operative management. Patients were randomly assigned to pSAE with EC or VP. The main outcome was feasibility. We also evaluated technical