MAYO CLINIC

Surgical Yield: Are Virtual Consults Effective?

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Objective: Determine the effectiveness of virtual visits as a modality for initial surgical consults compared to initial face-to-face consults to drive surgical yield.

Planning: With the onset of the COVID-19 pandemic and executive shelter-in-place orders in March 2020, there was an urgent need to develop new ways to ensure continuity of surgical services while reducing the risk of viral transmission. Telehealth expanded rapidly due to changes in regulatory, licensure, and reimbursement requirements by both the federal government and private payers in response to the public health emergency. Similar to many healthcare institutions, Mayo Clinic adapted and rapidly scaled mature virtual care services in response to the pandemic and this growing need.

A multi-disciplinary team comprised of physicians, clinical, and other administrative team members was formed to define goals, objectives, and methods for a successful shift from face-to-face to virtual consults for initial surgical consults. A define, measure, analyze, improve, control (DMAIC) framework was used to identify improvement opportunities followed by a plan, do, study, act (PDSA) approach to apply changes. The intent was to ensure that initial surgical consults retained their integrity, resulting in a beneficial medical assessment of the patient's appropriateness and readiness for surgery. Although traditionally surgical areas felt the need to meet the patient face-to-face, it was determined that an effective initial surgical consult could be performed so long as there was quality imaging, test results, and a complete patient history/assessment. These key requirements could be met as effectively for virtual consults as for face-to-face.

Surgical practices often measure productivity via surgical yield to determine how successfully surgical consults generate surgical cases. This metric is calculated as the number of surgical cases resulting from an initial surgical consult within 90 days divided by the total number of initial surgical consults. In 2019, where all initial surgical consults occurred face-to-face, the average surgical yield across the in-scope divisions was 44.5%. To assess the impact of virtual surgical consults, a retrospective analysis was conducted for all surgical consults completed within the divisions of Thoracic Surgery (THS), Hepatobiliary and Pancreas Surgery (HPB), and Colon and Rectal Surgery (CRS) between July 1, 2020, through June 30, 2021. All initial surgical consults within the time period were abstracted and analyzed for surgical consult characteristics, patient demographics, and all resulting surgeries within 90 days.

Implementation Methods: As the pandemic progressed, opportunities for initial consults via face-to-face returned, resulting in a hybrid environment in which both face-to-face and virtual modalities were available for initial surgical consult. Initial virtual consults were scheduled as regular visits and delivered via videoconferencing software (Zoom™, San Jose, CA) integrated into the electronic health record (EPIC™, Verona, WI). Upon being referred for an initial surgical consult, patients were given the choice of scheduling either for a virtual or face-to-face consult. Electronic reporting and operational processes have been implemented to provide regular access to surgical yield, which continues to be monitored quarterly.

Results: During the twelve-month period evaluated, 6,107 initial surgical consults were performed, 16.9% (n = 1,035) via virtual consult and 83.1% (n = 5,072) via historical face-to-face consults. The 90-day downstream surgical yield for virtual surgical consults was 41.6%, five percentage points (ppts) lower than the face-to-face consults yield of 46.6%. Results by division showed some variation in both virtual consult utilization and corresponding surgical yields (Table 1).

Table 1: Surgical yield by initial consult modality

	CRS	HPB	THS	Combined
% Virtual Consults	10.1%	12.2%	33.3%	16.9%
Virtual Consult Yield	37.5%	42.0%	43.8%	41.6%
Face-to-face Consult Yield	41.8%	52.6%	51.1%	46.6%
Yield Difference	(4.4 ppts)	(10.6 ppts)	(7.3 ppts)	(5.0 ppts)
2019 Surgical Yield	40.4%	47.3%	47.9%	44.5%

In assessing the variation across the divisions, each patient's geographical proximity to the Mayo Clinic campus in Rochester, Minnesota was considered a factor influencing yield. Patients were categorized as residing either within 180 miles (regional) or beyond 180 miles (national) from campus (Table 2). Surgical yield was relatively unimpacted by initial surgical consult modality for regional patients but was somewhat negatively impacted by virtual consults for national patients.

Table 2: Surgical yield by patient's geographical proximity and initial consult modality

	CRS		HPB		THS		Combined	
Patient Proximity	Regional	National	Regional	National	Regional	National	Regional	National
% Virtual Consults	4.7%	16.1%	5.1%	16.3%	20.8%	43.0%	8.9%	23.9%
Virtual Consult Yield	48.6%	33.9%	53.6%	39.9%	49.3%	41.7%	49.6%	39.1%
Face-to-face Consult Yield	42.6%	40.9%	53.0%	52.4%	53.7%	48.2%	47.2%	46.1%
Yield Difference	6.0 ppts	(7.0 ppts)	0.6 ppts	(12.5 ppts)	(4.4 ppts)	(6.5 ppts)	2.4 ppts	(7.0 ppts)
2019 Surgical Yield	39.8%	40.9%	49.5%	46.0%	49.6%	46.6%	45.0%	44.2%

Key Takeaways and Considerations:

- It is anticipated that, post pandemic, patients will continue to expect healthcare institutions to offer virtual surgical consults as an option.
- The data indicates that virtual consults can be effective in driving surgical yield so long as there is quality imaging, test results, and a complete patient history/assessment. However, they do not produce as strong of a surgical yield as initial face-to-face consults, especially for patients located further from the medical campus.
- Other drivers of surgical yield variation reviewed include payor and periods of surge for COVID-19 cases. No significant differences in surgical yield were observed between modalities based on these factors.
- Before implementing a virtual consult strategy, healthcare institutions will want to consider how to structure initial surgical consults to ensure effective use of virtual modalities, the geographic makeup of their patient population (and the potential that virtual modalities may encourage "shopping around"), and the potential impact of post-pandemic changes to regulations, licensure, and reimbursement.

- Opportunities to further assess variations in virtual consult surgical yield could include referral source and patient indication, which may help better understand potentially unintended consequences of virtual consults, including second opinions and patient shopping. Additionally, assessments of patient cancellation and no-show rates could be considered as counterbalance measures.

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