

Better Data, Better Billing

Avad uses machine learning to help hospitals make more money. Modern machine learning, plus our expertise in Epic data lets us outperform other auto-coding vendors. We are a specialty vendor for anesthesia. Surgical module coming late 2018.

Case Study 1: Anesthesia private practice

Case study 1 is based on evaluating a data set of 16,375 anesthesia cases with clinical documentation in the Epic EHR. In addition to the provider's note, 30 data elements in the medical record were found to be predictive of accurate coding. These mimic the process of a human coder checking several places in the medical record and let us achieve accuracy numbers not possible when only referencing the note.

In this study, 30.0% of the cases could be coded with no human intervention. The remaining cases get some default values filled in similar to using any other assisted coding software if there is sufficient confidence.

Operational Methodology:

Each claim is assigned to one of three coding workqueues:

Workqueue	Description	Coder Productivity	Accuracy
Green	Automated. No one needs to open this workqueue.	<i>Fully automated!</i>	> 99% *
Yellow	Coding staff review recommended codes. Details and other code options in the comments.	50% faster than manual coding	> 90% *
Red	Coding staff works exactly as they do today.	No change	n/a

Research Methodology and Outcomes:

Rigorous Evaluation: The data set was split into 70% for use in training our models and 30% to evaluate the outcomes. This ensures that our research performance closely matches a production system.

For the training data set, the model's green queue was accurate without fail. For the evaluation set, the model was accurate 99.6% exceeding our 99% benchmark for success.

Multiple redundancy: The Avad algorithm is a combination of a series of advanced machine learning approaches as well as rules based on our domain knowledge. Each case was evaluated an average of 8.5 times in different ways depending on the complexity of that case's documentation.

Conflicting results occurred in only one case out of 3419 achieving scores high enough for the *green* workqueue. That case was evaluated as *yellow* (flagged for manual review).

Yellow codes: 37.4% of the evaluation data set was evaluated as yellow, meeting our 90% accuracy threshold for assisted coding, but not the 99%+ required for auto-coding. Codes are defaulted in for these values with comments providing suggestions to the human coder.

Value Proposition:

Coder Productivity – Productivity up 50%

Productivity estimates are primarily from coder focus groups. We import our results into existing billing software which allow coders to work yellow queues faster than other assisted coding systems which require learning another piece of software. This is estimated to be about half the productivity gain, while the rest comes from the 30% of volume that no longer requires any human coding.

Revenue Increase – Revenue up 5%

Like other assisted coding, Avad has checks to prevent under-coding and add supplemental charges that might be missed when billing the primary CPT for a case. Unlike other assisted coding, Avad can also use the additional data points we evaluate to flag cases where the provider's note might be lacking information needed to appropriately high value codes and suggest compliant language a coder can use to follow-up with the provider. Examples from the case study suggest substantial revenue gain is possible by using coder time saved to do additional follow-up.

Working Cash – Coding backlog eliminated

Coding backlog comes from coders not having enough time in the day. Increasing productivity solves this problem, with the same one-time cash of reducing A/R days.

Next Steps:

We are eager to be tested at larger scale. Avad offers:

- 1. Free analysis** for one week on your organization's data producing numbers on the effectiveness of this model tailored specifically to how you use Epic. We have report scripts already prepared, so this can be completed with less than 2 hours of your staff's time.
- 2. Fast implementation.** We are a group of ex-Epic employees, so we can be up and running with less than half the work-effort of other vendors. Don't wait. Put us to the test.