

## Autonomous Medical Coding Leapfrogs Computer Assisted Coding

Coding technologies have been evolving for several years to augment or replace time-consuming processes of referring to voluminous coding books on ICD, CPTs and numerous coding guides. The first iteration of this evolution was to software-enable coding books and guidelines so that coders could easily browse and search for diagnoses and procedures by typing parts or all of the relevant phrases in their computers. As shown in the figure below, such technologies **augmented** coders' ability to quickly find what they needed, thereby enhancing their productivity marginally but still requiring coders' vast clinical knowledge and coding experience to read the encounter document, select phrases or parts of the document to code and decide how to code such parts.

In the latter part of last decade, coding software technologies incorporated natural language processing (NLP) to detect relevant clinical phrases to **assist** coders and to improve their productivity. These technologies, also known as **Computer Assisted Coding (CAC)** promised to significantly improve coders' productivity but never delivered on the promise. The marginal gains achieved by CAC were often offset by the significant product and implementation costs. These technologies also continued to require coders, the most valuable and scarce revenue cycle resource, to exercise their vast clinical knowledge and coding experience to complete the coding tasks. In addition, CAC vendors delivered an array of fragmented products for NLP, encoding, editing and charge capture which not only failed to deliver the promised productivity gains, but were also non-integrated.

As the name implies, **autonomous coding** incorporates Artificial Intelligence (AI) techniques to autonomously (without the involvement of coders) complete the majority, if not all, of the coding tasks:

- Reading the encounter document via NLP,
- Detecting and semantically categorizing clinical phrases and contexts,
- Applying coding and charge capture rules to derive ICD, CPT and HCPCS codes and charges.

**Autonomous coding** delivers significant productivity gains and transforms highly valuable and scarcely available coders to perform the role of auditors. In essence, human users review software derived codes, occasionally override such codes and approve them for billing. Autonomous coding solutions also apply rules and algorithms consistently, thereby eliminating variability that often occurs amongst coders with different skills and experiences. Lastly, software can tirelessly read large encounter documents and derive all of the relevant codes and charges, thereby providing much more comprehensive coverage of encounter services than otherwise possible. MedicalSavant's experience shows that autonomous coding can improve coders/auditors productivity by up to 4 times.

**Autonomous coding** forms a natural stepping-stone and segues to the next inflection point in coding, namely **automation**. AI enabled autonomous coding software solutions can determine the confidence levels of codes and charges autonomously derived. By combining such confidence scoring intelligence with the ability to process user specified automation scenarios and rules, these solutions can determine if autonomously derived codes and charges may be **automatically** finalized, without review by auditors, and sent to the clinical or billing system for further downstream revenue cycle processing. By parlaying productivity gains delivered by autonomous coding, **AI enabled automation** software solutions not only leapfrog erstwhile **assisted** coding technologies but they also deliver levels of productivity gains never imagined by the earlier coding iterations.

