## Methods to improve research collaboration and productivity

One way to improve productivity is developing a research collaborative group, otherwise known as a *collaboration circle*. Researchers share in the responsibilies of projects and then may qualify for authorship on each other's papers when the project is completed.

The key to developing a collaboration circle is to identify other faculty members or researchers who have similar research interests. One strategy is for *each member* to commit to being a *principal investigator* (PI) on one project per year. Principle Investigators are typically either the first author (The author that writes the protocol, completes fundraising and does most of work on the project) or the last author (generally oversees the project and adds expertise, direction and troubleshooting). Projects are then discussed within the circle, and then data can be collected by all members of the group. The PI typically performs the data analysis and then all members review and revise the paper.

Another strategy is to select *one main PI* of the collaboration, who may have more research experience, or more interest/time to spend with research than the other members. Here, the PI oversees all projects, all members contribute to the data collection and manuscript preparation and all collaborators are generally authors on the finished paper.

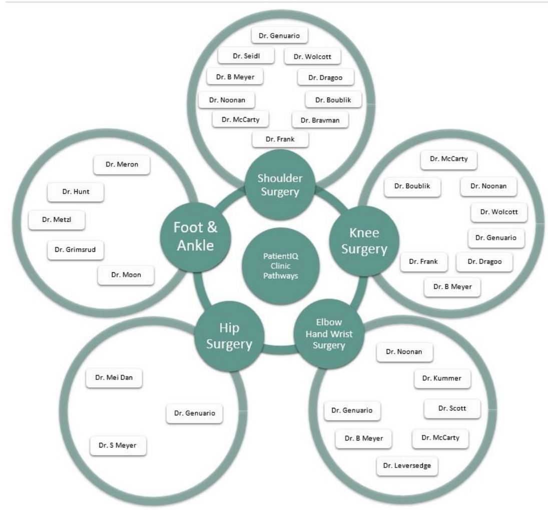


**Figure 1. Use of collaborative circles using the Patient IQ platform**

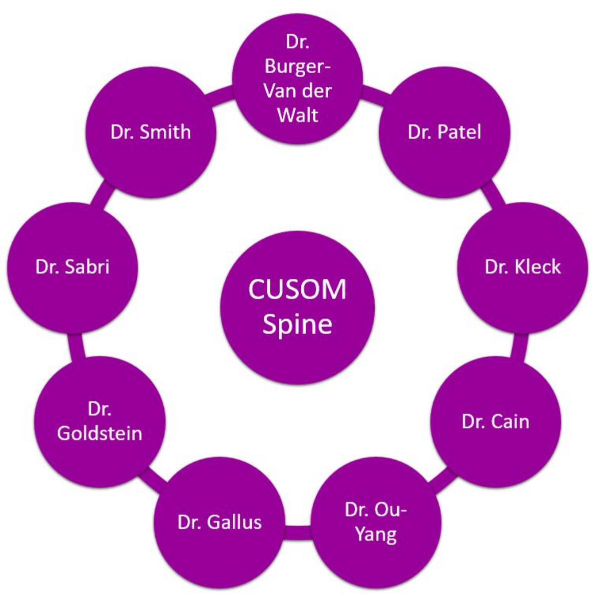


**Figure 2. Spine service line collaborative circle**

**Figure 1** is an example of a collaboration circle using the Patient IQ database as research platform. Here, collaborators form circles in various areas of expertise, each taking the role of a PI, and all share in the duties of study execution and manuscript development.

Circles can be formed around an Orthopedic surgery service line. **Figure 2** illustrates an example of the Spine Surgery Service. As no one for the spine team is solely dedicated to research, each faculty member can act as a

PI for one project/year. Other members can help with data collection and manuscript preparation on other PI's projects, and it would then be possible for each faculty to have 9 papers/year on their CV, of course assuming all members contribute to everyone else's project.

The trauma service provides an example of a different collaborative circle organization. Here, Dr. Alfonso has more of a research emphasis in his job description (see **Figure 3**). Here, he can start and oversee more projects, and in return, the rest of the division can help with data collection and possibly share a little more of the clinical load.

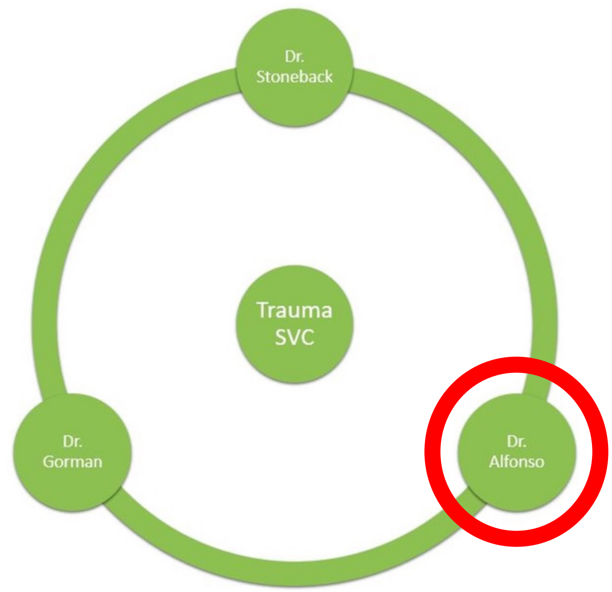


**Figure 3. Trauma service line example with a single faculty member serving as a PI for most projects.**

The key being an effective member of a collaboration circle is to understand that each collaboration is different**,** and they **each have their own rules that everyone agrees to.** Some adhere to strict authorship guidelines, while other do not. The key to an effective collaboration is good group communication *before* the project begins.