

Don't Severity-Adjust Costs due to Potentially Avoidable Complications (PACs)

In order to be fair when comparing the costs of Evidence-informed Case Rates between providers, we severity-adjust typical costs. Severity-adjusting the typical costs allows for the comparison of providers' resource use as if all patients had equal levels of severity. While severity-adjustment is performed at the individual patient level, patient-level data are accumulated at the practice, group or plan level in order to create appropriate comparisons. In addition, we do not severity-adjust PAC costs. We separate typical costs from PAC costs because we believe that PACs are caused by deficiencies in the delivery of care and not by patient severity, and we want to keep track of actual costs caused by these gaps in quality.

Severity-adjusting PACs would amount to creating a direct causal relationship between the severity of the patient and the occurrence of a PAC. In other words, we'd be stating that PACs are caused by patient severity when, at this point, we have no evidence that this is true. For example, we have found that for procedural ECRs, patient severity is not associated with PACs. For instance, for CABG and Knee Replacement procedures, we have seen that PACs seem to occur randomly across patients of all severity levels.

For the chronic care ECRs, we have found that average PAC costs as well as the percentage of patients with at least one PAC increases as patient severity increases. These findings are not surprising and don't contradict our fundamental premise. Patients with multiple co-morbidities are more complicated to treat and manage. There is significant evidence in the literature that these patients will often end up in emergency departments and/or be hospitalized. However, the causal relationship between patient severity and PAC occurrence is not more evident than the causal relationship between gaps in care and ambulatory care-sensitive hospitalizations, quite the contrary. Until there is clear evidence that patient severity is the primary cause for PACs, we will continue to treat PACs as costs related to deficiencies in care delivery and we will not severity-adjust them when comparing providers.

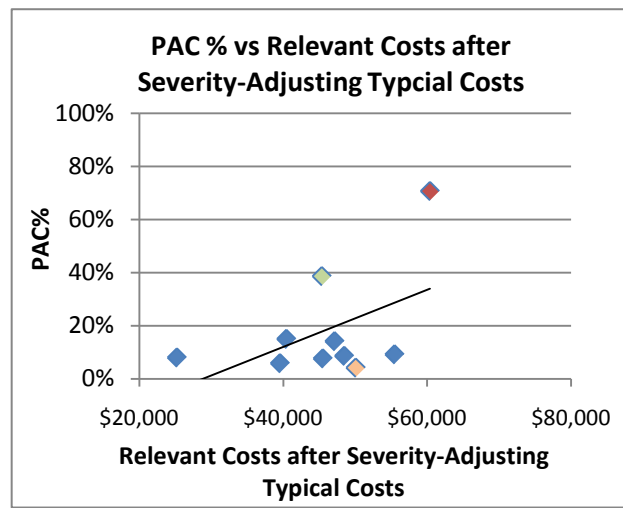
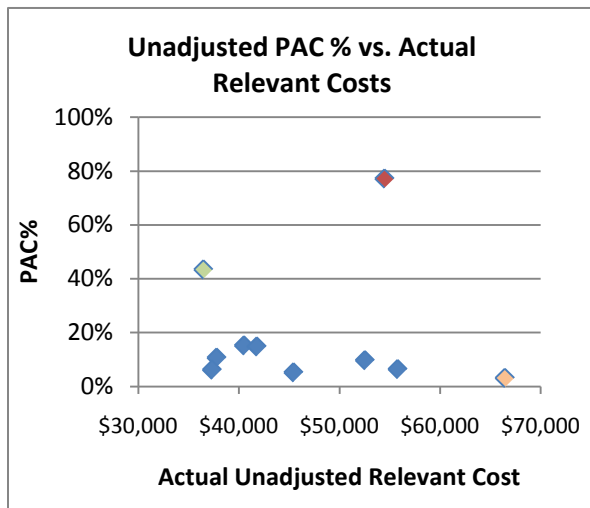
It is important to note, however, that when we build a prospective budget for an ECR, we severity adjust the typical costs, and then apply a proportional and fixed formula in determining the PAC allowance. 75% of the allowance is based on a proportional formula wherein patients with higher severity-adjusted typical budgets will receive a higher allowance for Potentially Avoidable Complications. This way, those caring for higher severity patients will get higher budgets and significant opportunities for margin. This is not meant to imply that more severe patients are expected to incur more PACs. We are also not using these PAC allowances as a means of comparison across providers. The purpose of these PAC allowances that increase with patient severity is so that providers are not tempted to cherry pick patients that are less complex or severe. Therefore, we are only trying to be sure we do not create a bad incentive that would be a detriment to patients with many risk factors.

The following is an example of what results when we severity-adjust typical costs for a patient, which then needs to be rolled up with other patients in order to get to an appropriate comparison. Assume that a provider has an average PAC cost of \$6,000, and non-adjusted average typical cost of \$44,000 for a CABG, so that the non-adjusted total relevant cost is \$50,000. This results in a PAC rate of 12%. After adjusting for patient severity, the average typical cost falls to \$40,000, the PAC cost remains at \$6,000, so the total relevant cost falls to \$46,000. This results in a PAC rate of 13%. Though it may seem unfair that the PAC rate increases in this instance, we feel that PACs are preventable by the provider. If this means that not severity-adjusting PAC costs results in the possibility of a PAC rate increasing, we are willing to accept that. Moreover, when it occurs, the actual increase in PAC rates is not by much. However, the change in typical costs does change significantly which is what we are looking for. Importantly, while these calculations are done at the patient level, assigning a PAC rate to a patient is

meaningless as the sample size is 1. PAC rates, before and after adjustment, are always calculated at the practice, group, health system or health plan level in order to have statistical significance. The example below illustrates this well.

Severity Index	Number of Patients	Avg Relevant Costs	Unadjusted PAC %	Avg PAC costs	Rel Costs after severity Adjusting Typical costs	PAC% after severity Adjusting Typical costs
<0.6	70	\$54,468	77%	\$48,351	\$60,374	71%
0.6- <0.7	60	\$36,462	43%	\$19,380	\$45,342	39%
0.7 - <0.8	60	\$37,770	11%	\$3,981	\$48,460	9%
0.8 - <0.9	110	\$40,487	15%	\$5,431	\$47,121	14%
0.9- <1.0	100	\$52,506	10%	\$6,263	\$55,458	9%
1.0 - <1.1	150	\$41,758	15%	\$7,498	\$40,417	15%
1.1 - <1.2	130	\$45,409	5%	\$2,358	\$39,531	6%
1.2- <1.3	60	\$55,757	6%	\$4,530	\$45,485	8%
1.3- <1.4	60	\$66,438	3%	\$2,521	\$50,087	4%
>1.4	50	\$37,310	6%	\$3,122	\$25,203	8%

In this table, note that when PAC rates change due to severity-adjustment, it is not significant. On the other hand, the change in typical costs is substantial.



These graphs provide an illustration of the data shown in the table. Again, PAC rates do not change much after typical costs are adjusted, but the change in typical costs can be significant. Note the red, green, and tan data points as they present substantial changes in typical costs. This example also illustrates that after neutralizing the effect of severity, PAC rates are correlated with total relevant costs as should be expected.