# The problem

It is necessary for forecasting calculation to determine how many enrolled and new cases will belong to the particular treatment regimen ( medicine) at any particular month. There are two modes to determine this – quantity of cases for each regimen at each month, called “by quantity” or total quantity of cases at each month and percent of each regimen, called “by percent”.

There is no calculation problem for the “by quantity” mode. But such sort of data may be unavailable for many users. Also a lot of data input required for this mode. So, for many users mode “by percent” is more suitable.

For the “by percent” mode calculation problem has existed. If for particular treatment regimen (medicine) percent of cases will be low and in particular month cases quantity will be relative low, then this regimen (medicine) will not be accounted by QuanTB. Short example:

1. Assume that 12% of all cases treat by some regimen.
2. Assume for March enrolled 4 cases
3. So, 4\*12% is 0,48 – will be treated by the program as 0 (using common rounding rules)
4. Suppose months of 4 or less enrolled cases is about 10
5. So, medicines for at least 4 cases will not be forecasted.

It isn’t abstract or training example. Take a look for the real situation for a typical Tajikistan district:

Total cases are 198.

|  |  |  |  |
| --- | --- | --- | --- |
| Cm 1g | 198 | 23 | 12% |

But only 7 cases are accounted by QuanTB for Cm!

# Solution proposal

There are an uncertainly existed for the “by percent” mode. We don’t know exact cases quantity each month that use Cm. Really, nobody know this.

To resolve this uncertainly, some assumption will be needed. So, assume that probability of using Cm is subordinated to uniform law. It means that every month 12% of the cases enrolled this month always use Cm. It seems as the best assumption, because any other assumptions may be like these:

1. Only cases enrolled in August will use Cm
2. Only cases have been enrolled from the first month will use Cm
3. etc…

The assumption about the uniform probability law will require change cases quantity representation inside QuanTB algorithm. Instead using whole numbers for calculated cases quantities for each regimen (medicine) it will be necessary to use the fractional numbers. For example:

|  |  |  |
| --- | --- | --- |
| **Month** | **Enrolled cases** | **Cases use Cm** |
| Feb.12 | 2 | 0,232323232 |
| Mar.12 | 2 | 0,232323232 |
| Apr.12 | 7 | 0,813131313 |

It is not big change. Anyway, changes of this algorithm and testing will be required, because of resolving the well-known streptomycin problem.