I. INTRODUCTION

1. An electronic response system has been built up to document controls, changes and whose decision it was to change the variable (the enterprises themselves or Statistics Norway). The main controls are passed back to the enterprises by mail for validation and the answers are reported to Statistics Norway and into a database. In addition to this, regional meetings have been arranged yearly with the health enterprises with the aim of improving the statistics.

2. This article is about editing near the source and concentrates on the accounts. In the second chapter there will be a short overview over the organisation of specialist health services in Norway. Further there will be a presentation over what kind of accounts statistic the Division for Health Statistics publish and how it is produced. Last there will be a short note on the cooperation with SINTEF Health Research, a private research institute, which produces important analyses on health based on the statistic. Chapter three will describe the general electronic response system and chapter four will describe meetings Statistic Norway arranges with the health enterprises.

II. ORGANIZATION OF SPECIALIST HEALTH SERVICES AND PRODUCTION OF THE STATISTICS

A. Organization of specialist health services in Norway

3. In Norway the health service is roughly divided into two sectors: primary care sector and specialist health services. The primary care sector, amongst other things, covers municipal health service, nursing and social care services. The specialist health services cover somatic care, psychiatry and ambulance service, and include both public and private suppliers of specialist health services. These services are regulated by law. The Division for Health Statistics at Statistic Norway produces statistic on the specialist health services for:
   - Activity
   - Personnel
   - Accounts

4. Since 2007, the specialist health services in Norway are organized in four health regions: Health North, Health Mid-Norway, Health West and Health South-East (a fusion of the earlier regions Health East and Health South). Health South-East is the largest of these regions. Each health region compromises many health enterprises (HE), which produce specialised health services and one regional
health enterprise (RHE), which owns the health enterprises in the region and is responsible for the health of the regions population. The regional health enterprises are in turn owned by the Health Department. At the time of writing there are 27 (regional) enterprises in total. In addition, there are a large number of private suppliers of specialised health services, which to different degrees have arrangements with health enterprises or with regional health enterprises.

B. Production and publishing of the statistics

5. The following account reports are collected yearly from each enterprise:
   - Balance sheet, divided by items.
   - Results, divided by type of activity, items and institutions
   - Cash flow statements

The results are reported divided by type of activity. These types say something about which activity, for example somatic or psychiatry, an income or costs transaction belongs too. In 2008 the enterprises reports results were divided by 29 different types of activity, but this will be reduced to ten in 2009.

6. The results and the balance sheet are reported to Statistic Norway as a file. The file is specified by Statistics Norway. The enterprises use their own data programs to make the file from the enterprises accounts system. There is a record for each number per type of activity and item. For example, a record from the results looks like this:

   0X2007\12000983975240983975240\610\420\53

There are 48 positions in total in one record and each position in the record has a meaning. When the file is sent from the enterprise to Statistic Norway, a set of automatic controls is done. These controls check that the different position in every record is correct. Typically, one control is checking that the two first positions is 0X (which is telling the data system that this is about results) and nothing else. If this is not the case, the enterprise receives a message that that the two first positions of record number xx is not 0X and this must be corrected before the file can be sent again. There are 15 automatic controls of the results and 10 controls of the balance sheet.

7. Cash flow statements are reported by an electronic questionnaire to Statistic Norway. We will not discuss this more in this article, preferring to concentrate on the results which are of primary interest. For completeness sake, it should also be mentioned that the private suppliers report their results to Statistic Norway. We will not discuss this part further in the following.

8. The Division for Health Statistic publishes the following:
   - Expenses including depreciation, distributed by type of expenditure and activity
   - Revenue, divided by type of revenue and activity
   - Net results, per health enterprise
   - Finance income and costs
   - Extraordinary income and costs
   - Investment, divided by type of investment.

Statistic of the balance sheet is not yet published for various reasons. Expenses and revenue are published by different kinds of levels: per enterprise, region and nation.

C. Cooperation with SINTEF Health Research

9. Statistic Norway has a cooperation with SINTEF Health Research regarding editing of the data from the enterprises. This cooperation is regulated by an agreement every year. SINTEF Health Research produces important analyses on health based on the statistic. Improvement of the account statistics for specialist health services has been partly driven forward by researchers wanting good quality data at the micro-level.
III. GENERAL ELECTRONIC RESPONSE SYSTEM

A. General editing system

10. Editing of the public health account is done in a general editing system called Genrev. It is a general system used by about 20 surveys for reporting from municipalities and districts to the government. In this system it is, for example, possible to have controls against previous years, to other variables and on aggregated levels. The general editing system Genrev is programmed in Oracle Forms and the controls in SAS. This system is going to be phased out because of lack of technical support from Oracle for Forms.

B. Electronic response system

11. Use of a general editing system and electronic data collection make it possible to have a general electronic response system. This gives the reviser possibilities to supervise the data collection and ask questions to the enterprises. All controls are specified by the reviser and are done in the general editing system. The results are then transported to the electronic response system where the reviser can decide whether the questions are going to be sent to the enterprise. Each enterprise has to appoint one responsible person with an e-mail address to report the account and answer questions about the account. An e-mail is sent to the responsible person with a link to a web-server in Statistics Norway with questions for the enterprise. For each question, the responsible person must decide if the information is correct or not. If it was correct, then they are asked to provide an explanation. If it was incorrect, then they are asked to provide the correct value. When the responsible person has finished the data are stored on the web-server and the responsible person is given a receipt. Now the reviser can use the data to edit the survey in the editing system Genrev. With this response system it is possible to supervise the data editing. It is easy to know which questions are not answered and how far in the data editing process they are. From the system it is easy to make indicators for the editing process. 12 surveys now use the general electronic response system. The response system is programmed in Perl.

IV. REGIONAL MEETINGS WITH HEALTH ENTERPRISES

A. Regional meetings

12. Statistics Norway has, together with SINTEF Health Research, arranged meetings in each Health region. All public health enterprises and the major private health enterprises have been invited. This has been done each year since 2005, and now the contacts with the enterprises are so good that the meetings only need to be held every second year. The meetings have always been held in February/Mars before the time of reporting the account to Statistics Norway. The purpose of the meetings has been to give a better understanding of why these data are important, to improve the quality of the report and to improve the relationship between the health enterprises and Statistics Norway/SINTEF Health Research. In the meetings Statistics Norway and SINTEF Health Research have provided information about what they emphasize when they edit the account i.e. distribution of function, distribution of common costs and income, accounts for institutions, internal trade, guest patient settlement, purchase of private services and external activity. In addition, Statistics Norway provides information about what they do with the data up to the day of publishing. This can include how to report, controls done when receiving the data, response system and final controls.

B. Effect of the meetings

13. A qualitative measurement of the effect of the meetings has not been made, but it can be seen that guest patient settlement agrees better and the common cost and income are distributed better, and both these numbers are of great interest. In addition, internal trade agrees better and the distribution of function has improved. The accounts are reported earlier and that gives more time for editing. The dialog between SINTEF Health Research and Statistics Norway has improved and in addition the dialog between regional health enterprises and the health enterprises has improved. The meetings have had a great positive effect!
Figure 1. Example of a list of questions that should be answered by the enterprise
Figure 2. Picture of the editing situation for the reviser showing which enterprises have been sent a mail and what the statuses for the questions/controls are.