MedCom IV
– how it turned out

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Over the last 13 years electronic communication has been making inroads in the Danish healthcare sector. From a small beginning with the exchange of prescriptions between general practice and pharmacies, communication has gradually been expanded in both content and volume. Today Denmark is one of the countries to have gone furthest in this area. Several million messages are exchanged every single month between all the parties concerned in the primary and secondary healthcare sectors.

It should be noted that electronic communication has never been an end in itself, but solely a means of boosting quality, efficiency and service. The Healthcare Data Network has been introduced and expanded in a healthcare sector undergoing dynamic development, characterised in particular by a high degree of specialisation, but also by a need for and willingness to preserve a decentralised structure in the healthcare sector with significant proximity to patients. The structural reform with the transfer of a whole series of healthcare tasks to the local authorities will substantiate this trend.

The weighting of good contact with patients is not just a matter of geographical proximity but also of openness, where the patients have easy and quick access to all relevant information about their own treatment. All these development trends endow electronic communication with a very central role, as an indispensable aid in the everyday work of the health service. There is strong evidence for this in the many measures taken during the MedCom IV period. In all their diversity, they speak their clear languages about greater dissemination, more actors, new forms of communication. A common feature of the projects is increased use of the new opportunities presented by the Internet-based Healthcare Data Network. The close interaction with the new aids, such as the electronic patient record and Sundhed.dk, is also characteristic of the current development of the Healthcare Data Network.

MedCom V takes over where MedCom IV left off – not essentially different in nature, but a natural continuation of the work carried out over the years and at the same time innovative in relation to the utility electronic communication will provide for the healthcare sector of the future.

This brochure first describes the status of the projects in the MedCom IV period (2002–2005). The principal features of tasks for the next two years in MedCom V are then outlined.

Aims of MedCom. MedCom aims to contribute to the development, testing, dissemination and quality assurance of electronic communication and information in the healthcare sector with a view to supporting coherent treatment, nursing and care.
Local-authority projects

Advisement communication

The advisement communication comprises a simple automated orientation between a hospital and local authority on whether a citizen is admitted or discharged. If the citizen receives home-care services, the local authority additionally supplies contact information to the hospital department in the admission result. Advice thus comprises advice of admission, admission result and advice of discharge.

At the end of October 2005, 92 local authorities were connected to the Healthcare Data Network, and advice communication covers 44% of the Danish population. All the counties, the Copenhagen Hospital Corporation and the Bornholm Regional Municipality have activities relating to electronic hospital-local authority communication in cooperation with a constantly rising number of local authorities.

There is a high level of interest in advice communication. The local authorities see benefits in advice of admission/discharge. However, there is a need for continuous optimisation of automated advice communication.

Both technical and organisational processes have to be arranged and coordinated. This work is continuing at hospitals, local authorities and suppliers.

Correspondence message and warning of completion of treatment

There is strong national interest in establishing electronic communication between the local authorities and the partners they

★ Local authority connected to the Healthcare Data Network
- Spearhead county: All municipalities on the way
- All local authorities connected
- County taking part in the local-authority project

The diagram shows those local authorities and counties that have implemented advice communication.

The counties of Frederiksborg, Funen and Storstrøm have been spearhead counties in the Hospital-Local Authority XML projects. These counties have had a target of attaining 80–100% local-authority connection in advice communication.
cooperate with in the healthcare sector. In particular, there is a widespread wish to exchange data on care, training and medication.

Two messages – the correspondence message and electronic version of the warning of completion of treatment – were pilot-tested and pilot-implemented in the MedCom IV project period.

The pilot implementation of the correspondence message, at the end of 2005, covers hospitals, local authorities, pharmacies and general practitioners. The correspondence message is free-text-based, and can be used for the exchange of data between the parties until it becomes possible to exchange structured data. In addition, the correspondence message can serve as a bridge-builder between the electronic specialist systems, which vary widely in terms of content, data structure, technical structure and dissemination.

Pilot testing of the correspondence message and warning of completion of treatment has been concluded. Several ECR suppliers have adapted or are in the process of adapting the correspondence message, so that the local authorities can send data relating to an admission report to the hospitals in the correspondence standard. Some hospitals are working in the same way by sending a discharge report and rehabilitation plan via the correspondence message.

There is thus a solid foundation for the dissemination of the correspondence message in 2006–2007, as this form of message may meet a communication need in conjunction with the structural reform.

At the same time, MedCom is monitoring development in the EPR and ECR systems, as there may prove to be a need for implementation of the “Admission and Discharge Report” standards in these systems.

Warning of completion of treatment can only be disseminated to a limited extent. Only a few hospitals have chosen to implement the message in their PAS systems. When the hospitals have implemented the notes module of the electronic patient record, greater dissemination may become appropriate. MedCom is currently gathering experience of the warning message.

Svendborg Local Authority uses the correspondence message to send admission reports to hospital personnel. The admission report is automatically generated in the local authority’s ECR system and contains contact data and information on care, training and medication.
Medical practice – home care

The lighthouse project “Electronic information exchange in the healthcare sector” comprised Aalborg Hospital, home care in Aalborg Local Authority and four medical centres.

Initial experience with regard to electronic communication between home care and medical practice has been gathered through this project.

The correspondence message, prescription renewal and home-care status standards were used in the lighthouse project.

Several local authorities in various counties have subsequently established electronic communication between home care and medical practice, by using the correspondence message and prescription renewal messages.

Use of the correspondence message between general practice and home care is being rapidly implemented, as the correspondence message at the outset is technically possible in many GP practices. The message is used for the exchange of information on examinations, test results, information on medication and enquiries.

Local-authority statistics show that three times as many correspondence messages are sent from general practice to home care as from home care to general practice.

Local authorities and some medical practices have the option of using the electronic standard for prescription renewal rather than using fax or phone.

LÆ forms

The project relating to LÆ forms is intended to ease the written communication between the local authorities and general practitioners and between the local authorities and specialists both in hospitals and in private practice.

LÆ forms are used in many areas in municipal administration, for instance in connection with early-retirement pension and sickness benefit. Electronic versions of the forms are a natural part of doctors’ practice systems, but at present the forms are sent on paper.

The procedure in using LÆ forms comprises two steps. A request is first sent from the local authority requesting completion of a certificate. The application can be sent to a GP or to a specialist in private practice. The latter then sends the relevant information back to the local authority on a certificate. The LÆ form project makes it possible to carry out this communication electronically.

OIO (Public Information Online) is involved in the work in order to contribute skills relating to web services and security policy. The web service area is relatively untried in relation to the problems associated with form integration. Kommune-information and suppliers of doctors’ systems have also provided active input.

The strategy is to draw up a specific proposal for the “good web service” as a foundation for communication in the area of web service. The expectation is that it will be possible to use this foundation on many different web services, for instance LÆ forms.

A supplementary area of effort is the issuing of an integration recipe book for the “Dynamic Form” with a description of XML data content and structured data capture. The concept is to make it possible to broaden the same web service to new form areas.

The LÆ project itself will be implemented on the basis of the results of this work.
Internet strategy

The Infrastructure project

A nationwide Internet-based network has been established through the project which the parties in the health service can use for secure communication. This Healthcare Data Network is designed to link the existing secure intranets in counties, local authorities and other organisations. As a result, the parties in the healthcare sector avoid having to establish new secure links every time a need for communication arises.

The Network supplements the already extensive EDIFACT communication in the Danish healthcare sector with other forms of communication, including secure access to looking up in external IT systems, exchanging images and setting up videoconferencing. The public Danish eHealth Portal, Sundhed.dk uses the network to establish secure connection between the portal and the basic systems in the healthcare sector.

Counties/CHC, public and private hospitals, practitioners under the national health service, local authorities, pharmacies and private laboratories as well as IT suppliers to these parties are approved in advance for VPN connection to the Healthcare Data Network's node. When they join the network, they enter into a cooperation agreement with MedCom. They can then freely use the network for exchange of information in the healthcare sector.

Institutions with VPN connection to the Healthcare Data Network’s node. November 2005

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<tr>
<th>Government institutions</th>
<th>Local authorities</th>
<th>Other parties</th>
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<td>Ministry of the Interior and Health</td>
<td>Herning Local Authority</td>
<td>Apoteksnettet</td>
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<td>Danish Medicines Agency</td>
<td>Copenhagen Local Authority</td>
<td>BeKTra, Patient transport</td>
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<td>National Board of Health</td>
<td>Lyngby-Taarbæk Local Authority</td>
<td>Carelink, Sweden (Västmanland)</td>
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<td>Counties etc.</td>
<td>Odense Local Authority</td>
<td>Diako Flensborg</td>
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<td>Bornholm Regional Municipality</td>
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<td>East Tallinn Central Hospital</td>
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<td>Århus County</td>
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<td>Research Unit for General Medicine, SDU</td>
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<td>Frederiksborg County</td>
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<td>Franziskus-Hospital, Kiel</td>
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<td>Funen County</td>
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<td>Varde Heart Centre</td>
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<td>Copenhagen Hospital Corporation</td>
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<td>Copenhagen General Practitioners’ Laboratory</td>
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<td>Copenhagen County</td>
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<td>Norwegian Health Net</td>
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<td>North Jutland County</td>
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<td>Hamlet Private Hospital</td>
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<td>Ribe County</td>
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<td>Rehab Varde (Falck)</td>
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<td>Ringkjøbing County</td>
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<td>Steno Diabetes Center</td>
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<td>Roskilde County</td>
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<td>Sundhed.dk</td>
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<td>Storstrom County</td>
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<td>Vilnius University Hospital</td>
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<td>South Jutland County</td>
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<td>Vejle County</td>
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<td>West Zealand County</td>
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<td>Viborg County</td>
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Web lookup of clinical biochemistry laboratory results at Sundhed.dk

When a patient is admitted to the hospital or is undergoing treatment with a specialist, it is often appropriate for the doctor to have access to the results of the laboratory tests the patient has previously undergone. This means that the patient receives better treatment and avoids repeated tests. At the same time both time and money are saved.

Using MedCom’s Internet-based Healthcare Data Network, it is possible to obtain access to clinical biochemistry laboratory data at the public Danish eHealth Portal, Sundhed.dk. All doctors who have a digital signature have access to a particular patient’s laboratory data. For this to be possible, all clinical biochemistry laboratories have to be connected to the solution. MedCom, in cooperation with Sundhed.dk, has entered into agreements on joining with almost all the counties. From the end of
The aim of the “lookup of X-rays and descriptions via the Internet” project has been to give healthcare professionals direct access to central patient information, which is stored in another county or in the hospital’s own RIS (Radiography Information System) or PACS (Picture Archive Communication System), including in conjunction with urgent admissions, treatment of free-choice patients or in the preparation of treatment of a new patient. The healthcare professional can obtain the information quickly via Web lookup, so that the patient’s treatment is effective and of the highest quality.

Web lookup also makes it possible to establish different telemedicine services, such as asking an expert for a second opinion. As the shortage of experts in the area of radiology clinics increases, this type of telemedicine solutions will steadily gain ground, perhaps in cooperation between the hospital service and specialists in private practice or private radiology clinics.

Finally the lookup solution will be useful for GPs when they have to inform patients about their illness and treatment, as X-rays can encourage dialogue with the patient.

Seven counties have linked PACS or RIS servers to the Internet-based Healthcare Data Network during the project period and in more or less defined pilot projects have made the information available to partners outside their own organisations. The information has been available using web lookup via the closed Healthcare Data Network.

Provisional experience suggests that X-ray lookup solutions are particularly useful for cases between the hospital service and private clinics and for teaching purposes in general medical practice. Urgent need for exchange of X-ray information between hospitals is based instead on actual teleradiology transfer of X-rays, in several places via the Healthcare Data Network.

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<tr>
<th>PACS/RIS (servers)</th>
<th>Number of agreements</th>
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<tr>
<td>Frederiksborg County (PACS)</td>
<td>6</td>
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<tr>
<td>Bornholm Regional Municipality (RIS/PACS)</td>
<td>5</td>
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<tr>
<td>Frederiksborg County (RIS)</td>
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<tr>
<td>Funen Hospital, Ærø (PACS)</td>
<td>4</td>
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<tr>
<td>Odense University Hospital (PACS)</td>
<td>3</td>
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<tr>
<td>Ribe County (PACS)</td>
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<tr>
<td>Aabenraa (PACS) – test</td>
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<tr>
<td>West Zealand Hospital (RIS/PACS) – test</td>
<td>1</td>
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<tr>
<td>Odense University Hospital (RIS)</td>
<td>1</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>27</strong></td>
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X-ray lookup solutions are particularly useful for cases between the hospital service and private clinics and for teaching purposes in general medical practice. Urgent need for exchange of X-ray information between hospitals is based instead on actual teleradiology transfer of X-rays, in several places via the Healthcare Data Network.

At Sundhed.dk, doctors with digital signature can gain access to clinical biochemistry laboratory data.

Connected X-ray systems as of November 2005. The number of agreements refers to IP agreements with external parties that have access via the Healthcare Data Network.

**Teledermatology**

Teledermatology is based on the sending of digital images of skin conditions.
conditions, as a supplement to the traditional cooperation and patterns of patient referral between medical practice and specialists in dermatology.

The overall aims of the teledermatology project have been to:

- Replace/supplement general referrals to skin specialists with teledermatology consultations.
- Assure patients of equal and quick access to specialist assessments of skin images through their own doctor.
- Support continuing training of GPs through communication with skin specialists.
- Establish nation-wide provision for telemedicine skin image consultation.

The following activities have been carried out in the project period:

- **Healthcare recommendations.** Healthcare recommendations on practical conditions in connection with cooperation between general medical practice and dermatology specialists have been drawn up, including the content of patient referrals and discharge letters in teledermatology cooperation. The recommendations are drawn up in cooperation with the Danish College of General Practitioners and the Danish Society of Dermatology and Venereology.

- **Digital photography course.** In cooperation with Niels Veien, an Aalborg-based dermatology specialist, MedCom has issued the instruction cd “How to take a good skin photograph in two minutes”, with practical advice on photographic technique and patient setups for photography during the consultation. This material has provided the basis for several photography courses for GPs.

- **Pilot projects.** Eight counties and Copenhagen Hospital Corporation have had teledermatology activity on a varying scale over the project period. In several places the project has been based on local Section 2 and Section 3 agreements between the local national health service unit and practitioners on fees to be paid for general practice and specialist dermatology practice.

- **The MedBin standard.** Digital images of skin conditions have to date been sent in the vast majority of cases by ordinary e-mail, with anonymised image material attachments, while the patient referrals are sent as EDI. This procedure entails a number of manual procedures at both the sender and the recipient.

  The intention is for image exchange in future to be done using MedBin standards, where the sender’s record system automatically links the image material to the patient referral, and the recipient’s record system automatically stores images and referral together in the patient’s record.

  All significant suppliers of record systems for specialist dermatology practice and by far the majority of suppliers of record systems to general practice now support the MedBin standard for use in teledermatology cooperation.

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The telemedicine cooperation platform: The Collaboration server

Eight counties and CHC (Copenhagen Hospital Corporation) have carried out teledermatology activities in MedCom IV.
of a secure and cheap telemedicine Collaboration server is based on solutions developed in two international projects, PICNIC and ciTTis.

The overall aim of the project was to make the telemedicine cooperation platform, the Collaboration server, available to all parties in the Danish health service. In addition, the project was intended to continue the development of the Open Source components the solution is based on, and make them available for all IT suppliers.

This was to be done through a number of pilot projects, which were to ensure the necessary clinical validation of the Collaboration server.

Overall, there have turned out to be far more opportunities to use the Collaboration server than was originally anticipated. The Collaboration server can be put to use, regardless what IT system the individual organisation has, and subsequently – when the actual communication need has been determined – proper integration can be made. This makes the solution very attractive for use in connection with widely differing projects in the Health Service.

The Collaboration server can serve as a bridgebuilder for electronic communication between healthcare parties that use electronic systems at different levels. In the MedCom projects the Collaboration server has been tested with varying degrees of success in the following areas:

Hospital-Hospital communication. In the international project ciTTis, the Collaboration server was tried out as an Internet-based “resource agent” in support of specialised healthcare activity in Funen County, Kiel, South Jutland County and two hospitals in Flensborg, as well as Kiel University Hospital.

Hospital-Local Authority communication. The project was to try out the Collaboration server for communication between home care and hospitals. The preliminary analyses of the trial have shown that the Collaboration server will be able to improve the communication between the parties in a number of cases. The Collaboration server can replace part of the communication that takes place by fax, phone, letter or on little yellow notes.

Establishment of the Collaboration project. The development of a cooperation platform and cooperation agreements began in 2004, while the actual pilot testing took place in 2005. The participants involved in the pilot project were Copenhagen County, Gentofte Hospital to Lyngby-Taarbæk and Søllerød Local Authorities, Hvidovre Hospital to Copenhagen Local Authority, Frederiksborg County, Hillerød Hospital to Frederiks- værk and Stenløse Local Authorities, Funen County, Odense University Hospital to Odense Local Authority, Ringkøbing County to Herning Local Authority and South Jutland County to hospitals in Flensborg and Kiel.

Videoconferencing

The purpose of the videoconferencing project has been to promote the use of videoconferencing between counties and across sector boundaries in the healthcare sector. The project comprises:

- Technical consolidation of the possibility of videoconferencing via the Healthcare Data Network.
- Construction of a list of numbers for videoconferencing at the healthcare portal, Sundhed.dk
- Gathering and passing-on of experience relating to videoconferencing on the Healthcare Data Network.
- Dissemination of clinical use of videoconferencing via the Healthcare Data Network, for example between cooperating hospital departments, between the practice sector and hospital sector and between island communities and the healthcare sector on the mainland.

Videoconferencing can be established today via the Healthcare Data Network, but the technical quality will not be satisfactory for clinical use until the end of 2005. Eight videoconferencing sites had been connected as of November 2005, all of which are being used for test purposes.

WebReq – requesting of laboratory tests

The purpose of the WebReq programme is to offer general practitioners web-based access to requesting laboratory tests in clinical biochemistry, clinical immunology, clinical microbiology and pathology.

Doctors can use WebReq to send an electronic request in MEDREQ format as a normal file to the laboratories. WebReq enables the connected doctors’ systems to have laboratory-specific information stored in a cen-
The system is constructed in such a way that access codes and master data are automatically transferred directly from the patient side in the doctor’s record system to a central server, where the WebReq program is located. The doctor orders the required tests at the selected laboratory and prints out the necessary barcode labels to mark the samples. The requests can be sent automatically to the chosen laboratory. The samples can then be taken at the doctor’s clinic, or patients can be sent to have samples taken in the laboratory or in their own homes.

An SSL-encrypted broadband connection is used between the doctor and the WebReq server. The WebReq server forwards a traditional EDIFACT request to the laboratory.

All the items of information are controlled individually by the repertoire of the individual laboratory on the WebReq server. The same PTB is used in all Danish laboratories, so that the doctors only have to hold one form for all laboratory tests.

- Easy access for doctors to set up their own profiles and their own tests.
- Provision for easy re-ordering of previous tests.
- Provision for printing out PTB (sampling forms), with barcode labels.
- Great certainty of correct sample marking.
- Same interface at the doctor regardless of laboratory.
- Independence in choice of laboratory and laboratory system.
- Ease of use for all doctors’ systems without major programming effort.
- Provision for changes in laboratory systems and doctor’s systems without involving all users.
- Same procedure in the laboratory for both EDI and web requesting.
- Cheap, no further investments in comparison with EDI requesting.

The system provides a number of benefits:

- ● Easy access for doctors to set up their own profiles and their own tests.
- ● Provision for easy re-ordering of previous tests.
- ● Provision for printing out PTB (sampling forms), with barcode labels.
- ● Great certainty of correct sample marking.
- ● Same interface at the doctor regardless of laboratory.
- ● Independence in choice of laboratory and laboratory system.
- ● Ease of use for all doctors’ systems without major programming effort.
- ● Provision for changes in laboratory systems and doctor’s systems without involving all users.
- ● Same procedure in the laboratory for both EDI and web requesting.
- ● Cheap, no further investments in comparison with EDI requesting.
The SUP project

The purpose of the SUP project is to make electronically registered patient data available across county boundaries (SUP: Standardised Extracts of Patient Data). The project is thus a look-up project and does not cover actual electronic sending of patient data.

The philosophy behind the SUP solution is that as hospital owner it is possible to make clinical data on currently and previously admitted patients available to other hospitals in the same county or in other counties. It is thus to be possible to make the patient's data available with a view to treatment in another county and afterwards to have access to clinical data on the treatment carried out. Data are supplied from existing patient administration systems (PAS) and existing electronic patient records (EPR).

From the technical point of view, data are extracted in the systems of the supplier county and supplied in XML format to a common SUP database, which the participating counties run jointly. From here it is possible to do lookups via an Internet browser in the data available for a given patient at a given time. At the beginning of the search an inter-county overview is supplied, showing where the patient has available data, and the search is targeted accordingly.

All data communication relating to SUP takes place in encrypted form on the MedCom Healthcare Data Network, and lookup can proceed either via local user control or via the joint public portal Sundhed.dk.

The following counties have adopted the SUP solution to date:
- South Jutland, Ribe and North Jutland Counties have joined in 2005.

Dissemination of SUP

As of mid-November 2005, Viborg County has supplied 100%, Vejle County 90% and Funen County approximately 40% of electronically accessible data, equivalent to around 750,000 patients or 16% of the Danish population. In October 2005, 690 SUP users have been logged on and have done lookups on 450 patients in separate procedures.

It has been difficult for MedCom to disseminate the SUP solution, as all data deliveries have been delayed. At the same time it has proved difficult to find inter-county cooperating departments which have had relevant data available to support SUP-based cooperation.

Actual dissemination is taking place at the end of November 2005 on a large scale in Vejle County. The dominant element...
here is intra-county lookup in two existing EPR systems. When Funen data are available in a large quantity, it will be possible for agreements already entered into between Vejle County and Funen County to be supported by the SUP solution.

In mid-December 2005 there will be data deliveries from Grønt System (PAS) from South Jutland County. Deliveries will then be made continuously from the same system from Vejle and Århus Counties, which will provide the foundation for the support of both intra- and inter-county procedures. Ribe and North Jutland Counties will not deliver until the beginning of 2006.

The SUP project is also being broadened on a pilot basis to GPs and specialists in Vejle and Viborg Counties, so that family doctors can use and evaluate the SUP solution in their daily work.

Facts about SUP

- SUP (Standardised Extracts of Patient Data) is a pragmatic solution, which on the basis of existing data can be made available with relatively few resources.
- SUP has fulfilled the wish for a complete solution for older systems and those due to be phased out shortly.
- SUP has been developed so that it can make web services available for existing and future systems.
- SUP is accessible at Sundhed.dk for healthcare professionals and can be made available here to local-authority healthcare and for use in rehabilitation and to Danish citizens using digital signature.
Mini-IRSK
Inter-Regional Hospital Communication Project

Mini-IRSK – that’s why!

By virtue of the Mini-IRSK Project, some of the communication in the hospital sector will be converted from manual to electronic management. The number of types of messages is small, but they are heavily used. The purpose is to create uniform and less time-consuming procedures combined with greatly increased security in patient treatment.

The background to Mini-IRSK is that electronic communication over the last decade has greatly expanded in the primary sector and between the primary sector and secondary sector, but electronic communication between hospitals is nowhere near as widespread. The Mini-IRSK project is aimed at rectifying this situation, and the strategy is for all Danish hospitals – or a large proportion of them – to be able in a short period of time to exchange a small number of heavily used messages in electronic form.

Complete digitisation of the communication between the hospitals is an immense task at a time when there is a focus on the introduction of EPRs and adaptation of IT systems within the future regions. But it is important at the same time to exploit the opportunities offered by information technology – particularly at a time when everything points towards more intensive cooperation between hospitals.

All the counties have joined the project, which will be exclusively carried out in relation to IT systems which are in use today. This means:

- PAS, Patient Administration Systems.
- Clinical Biochemistry.
- Existing EPR.

The project comprises:

- Discharge letters between hospitals.
- Patient referrals between public and private hospitals.
- Correspondence messages.
- Clinical biochemistry laboratory results between laboratories.

By virtue of the project, the hospitals of the counties involved will be able to communicate discharge letters and patient referrals to each other regardless what

### Timetable for expansion in 2005

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<tr>
<td>Cooperation agreement with the counties. Contracts with suppliers. The project organisation has been established, and an implementation plan has been drawn up.</td>
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<td>MedCom tests communication solutions. The necessary communication modules are installed. Launch meeting with the departments involved.</td>
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<td>Pilot departments conduct trials with the new communication. Implementation is carried out in all departments, including training of users.</td>
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<td>Total expansion.</td>
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</table>
system is used in the individual county. Hospital departments will be able to correspond with other departments, local authorities, pharmacies, general practitioners, specialists, physiotherapists, chiropractors and psychologists throughout the country. Biochemistry laboratories will be able to exchange electronic laboratory results. From 1 January 2006, private hospitals which have an agreement with the Association of County Councils will be able to exchange the same messages.

Expansion on a large scale

To attain the full benefits in communication, it is essential that the new opportunities are seized in all counties and that a large-scale dissemination takes place over a short period. To prepare the way for the project, MedCom has entered into an agreement with the system suppliers on acquisition of the necessary modules. In addition, MedCom provides financial grants for acquisition and implementation. MedCom additionally ensures the testing of modules, coordination of project activities at national level and makes implementation assistance available throughout the course of the project.

Each county has established its own project organisation, appointed a project manager and drawn up an implementation plan. The implementation includes agreement with a supplier on installation of modules, implementation of the pilot department and subsequent extension to all departments.

The whole process is carried out in close cooperation between MedCom and counties throughout the country.

It is possible to track the progress of the project at national level and in each individual county on the MedCom website.

Before

A large proportion of the messages concerned in the Mini-IRSK project are at present communicated on paper or by phone.

Patient referrals and discharge letters

Today no hospitals can send electronic patient referrals, nor can they forward electronic referrals to other hospitals/departments or private clinics. Messages of this type are sent on paper. Despite many different IT systems, all hospitals today can send electronic discharge letters to the primary sector. The hospitals in the individual counties cannot receive electronic referrals, but they will gain this capability under the Mini-IRSK project.

Correspondence message

The correspondence message can only be used for relatively few hospitals, and it is used to a very limited extent.

See facts box on page 15.

Biochemistry results

All biochemistry departments at present forward rare or infrequent samples for analysis in service laboratories or the laboratories of other counties. The results of these tests are received in the vast majority of cases on paper, and they are not included either in the generally used cumulative results or in the electronic records. The department which receives the laboratory result therefore has to subsequently transfer the result manually to an electronic system or to the paper record.
After

Patient referrals

The project covers clinical patient referrals to departments that use these in communication with the primary sector. When a hospital department receives a referral, most counties send a booking result in return as acknowledgement. At the same time a referral result goes to the patient’s doctor. One of the clear benefits of the electronic referral is that it is automatically stored in the system. It never disappears. Data from a patient referral sent electronically can be automatically transferred to the waiting list. X-ray referrals are not included in the project.

Discharge letters

The project covers discharge letters after admission and outpatient treatment in clinical departments. X-ray and Accident and Emergency letters are not included. By far the majority of hospital departments send out electronic discharge letters to the primary sector. The new aspect will be that discharge letters can be sent between hospital departments when a department refers a patient for treatment in another department. In departments that use EPRs, the fact that the discharge letter is integrated into the electronic record will be a clear benefit.

Correspondence message

Correspondence messages makes possible secure communication on patient-sensitive information, information over and beyond the formalised contact in the form of patient referrals, discharge letters etc. Use of the correspondence messages thus requires fewer resources. The correspondence message can work right down to the level of individual wards and 24 hours a day. See the box on the right.

Biochemistry results

Biochemistry laboratories send laboratory results electronically to the primary sector. The communication of laboratory results between laboratories takes place on paper, however. Under Mini-IRSK, the results will automatically enter the laboratory’s computer system. The results are then automatically included in the cumulative paper replies or directly in the electronic replies which the laboratories send to their users.

The correspondence message in brief

The correspondence message opens up the possibility of secure and lawful electronic communication of information related to the individual patient. The information concerned is additional to the standardised contact in the form of discharge letters, patient referrals etc. The correspondence message may, for example, be concerned with follow-up or questions relating to the individual patient’s treatment. In the case of emergency admissions, it may for example involve queries from a hospital department to a GP’s practice on medication, investigation or treatment in progress, social circumstances etc. It may also be a matter of gathering supplementary information in the case of patient referrals, information to the patient, which is to be forwarded from general practice.

The correspondence message thus replaces many time-consuming phone calls and exchanges of letters.
The XML-EPR standards

An extensive project began in the MedCom IV period involving the development of XML standards for future hospital communication. The aim behind the project was to ensure cohesion in daily routine communication between the clinical diagnosis departments and the departments providing treatment in the hospitals.

In this project, all the MedCom EDI standards were developed in an XML version in accordance with agreements on healthcare-related content and with technical review for all relevant suppliers. A total of 36 XML standards were developed. They were all adjusted so that they can contain future GEPJ (Basic Structure for Patient Records) elements.

MedCom’s XML standards have been developed in accordance with the OIO concept (Public Information Online), and have been posted on the MedCom website and on the health service’s XML server: www.sundcom.dk. This is the website for the healthcare sector’s XML domain committee.

The project was probably ahead of its time, and no countries implemented specific projects using the XML standards. The project was therefore halted and replaced by the Mini-IRSK project.

However, a start was made on use of the XML standards during the course of 2005, and they are now being used in a large number of contexts:

- The WebReq project, which is based on MedCom’s laboratory standards.
- Lookup of laboratory results via Sundhed.dk
- Ambulance records.
- Local-authority care records.
- Diabetes records.
- Together with a number of other applications, including in the L/E form project, which is under development.

A new feature being developed by MedCom is a national web service standard for general application in the healthcare sector based on these XML standards. Development of the web service standard, MedComWS, will be completed at the end of 2005, and it is planned to be implemented in a number of pilot projects in 2006.

EDI-XML conversion

MedCom tests and approves computer systems in the healthcare sector for the reception and dispatch of EDIFACT and XML documents as well as XML Web-Service solutions.

Testing was done previously by the individual supplier sending in files to MedCom, which tested them using an internal test tool. This process was time-consuming and demanding, and a test tool the suppliers can use
Standardisation

17

free of charge directly on the Internet has therefore now been developed. This offers a number of advantages, for instance that the suppliers themselves can perform tests continuously in the development process.

The test tool can try out EDIFACT and XML in accordance with MedCom standards. All the XML messages comply with current OIO standards and can be found on OIL.dk (Public Information Online). All the documentation of the new XML standards is built into the test tool and can be downloaded from here. This unique solution works so effectively that it has been copied in Norway.

The suppliers can also use the tool to test conversion from EDIFACT to XML and vice-versa. Using what are known as stylesheets, the suppliers can additionally see in the test tool how a particular message can be presented in a record system.

Existing EDI/PLO format

The volume of EDI communication has risen by 25% since 2003, so that more than 3.0 million EDI documents are now sent every month. This is equivalent to more than one document a second being sent throughout the year.

Ninety-seven per cent of general practitioners now use EDI, and almost all hospitals are now able to send electronic X-ray results and hospital discharge letters. This is unique coverage unknown in any other country.

Electronic patient referrals for hospital treatment and to specialists have not yet been used on a massive scale, nor has the use of laboratory requests, webreq, so far become particularly widespread.

In the local-authority area, the number of local authorities that exchange EDI with the hospitals has risen from 12 to 92 during the course of the Med-
Com IV period. Efforts must continue to be made to persuade the remaining local authorities to join.

A number of new actors have made a start on electronic communication over the last few years. Agreements have been entered into with specialists, physiotherapists, dentists, chiropractors, psychologists and private hospitals on mandatory use of EDI communication.

All the actors are to make a start within the next year on using computerised systems which are able for instance to send correspondence messages, discharge letters, patient referrals and bills. The expectation is that all the most common paper streams at the end of 2007 will have been replaced by integrated EDI solutions.

The PLO format

When there is a change of doctor or a doctor ceases practising, there is a need to move record information from the present doctor’s computer system to the new doctor’s computer system. The ‘PLO format’, which all suppliers of doctors’ systems have adopted and use, has been developed for this purpose.

MedCom tests and approves the doctors’ systems with regard to compliance of the format and form of transport.

The existing EDIFACT solutions using the MEDBIN standard are employed in the transfer of the records in PLO format. Today record information can be exchanged between 14 different record systems.
Web services and Service-Oriented Architecture

On the basis of a “White Paper on IT Architecture” and a “Manual for Architecture in e-Government”, the Ministry of Science, Technology and Innovation (MVTU) is working on the development of reference models for the various architectural elements described in the manual.

One of the priority areas is the formulation of operational instructions for a Service-Oriented Architecture (SOA). The OIO Web service Architecture models (Public Information Online) provide instructions on how to integrate service components based on the web service standards.

In cooperation with the Ministry of Science, Technology and Innovation (MVTU) and suppliers of IT systems to the healthcare sector, among others, MedCom has drawn up a proposal for the “Good Web Service” for use in the healthcare sector. The proposal is based on a service-oriented IT architecture, and the recommendation is for this architecture to be common to the public sector.

The purpose of the Good Web Service is to support communication between different parties in the healthcare sector – regardless what IT products and IT systems the parties concerned use.

Proposal for envelope

Web services are already to a large extent accepted for communication in the healthcare sector. However, the term web services is defined very broadly and is used differently in different projects. MedCom has therefore appointed a group of suppliers who have been commissioned to draw up a proposal for a common standard interface – a common envelope – in the use of web services in the Danish healthcare sector.

The “good web service” envelope is to ensure that suppliers can implement web services more quickly in the IT solutions offered to the healthcare sector. The envelope makes it possible for instance for doctors’ systems to communicate web services in a completely different way with different central providers of web services, for example with Sundhed.dk, the National Board of Health and Kommuneinformation.

MedCom V and the structural reform

MedCom V will be carried out in a period in which the healthcare sector is implementing the structural reform. The reform thus sets new limits in terms of organisation and tasks which are of significance for the prioritisation of MedCom V’s activities:

- Firstly a number of areas of healthcare pass from the counties to the local authorities. There is a need for MedCom to assist towards meeting the communication needs that contribute to creating optimum patient progression across the sectors. This applies for instance to the area of rehabilitation, where responsibility in future will to a greater extent rest with the local authorities, as well as in the establishment of healthcare centres in the local authorities.

  MedCom’s focus on standardised exchange of information between local authorities and hospitals or GP practices is thus updated by the structural reform.

- Secondly the counties have to look at how best to create coherence between the IT systems to be used in the new regions from January 2007. This is a major task for the hospital owners, who have to both create coherence in the transverse communication of patient data and at the same time think ahead and introduce electronic patient records based on GEPJ.

  It is logical in this situation to utilise MedCom’s existing and tried-and-tested standards for the exchange of record contents and nation-wide lookup solutions via the Internet-based Healthcare Data Network and Sundhed.dk (SUP – Standardised Extract of Patient Data – as well as laboratory and X-ray lookup).

- Thirdly there will be pressure on the resources of major parts of the IT organisations
The good correspondence message can be used for secure patient-attributable clinical communication

Advantages:
Data only entered once.
Each party updated on patient’s case.
Automatic storage of data and therefore documentation in patient’s record.

The correspondence message is distinguished by being relevant to communication between many of the healthcare sector parties.

of the regions and local authorities in the period during which the structural reform is being implemented. It may therefore be appropriate to create greater flexibility in implementation of the MedCom V projects than has been the case in previous MedCom projects.

MedCom provides regular advice and testing of EDIFACT, XML, web services and web lookup solutions on the Healthcare Data Network, as regions, local authorities and other healthcare actors become ready.

Local-authority projects

Local-authority projects cover communication between hospitals and local authorities and between GP practices and local authorities. In addition, there is provision for electronic communication with the pharmacies.

Work is being done in the existing local-authority-hospital project on EDIFACT and XML based messages. The use of XML can be regarded as one of the first steps towards working according to the principles of Service-Oriented Architecture (SOA).

At the same time, the suppliers of ECRs together with a number of pilot local authorities have implemented a project for Mobile Homecare. These initiatives contribute to preparing the area of elderly for the use of Internet technology with web service according to the principles of SOA.

As a result of the structural reform, MedCom’s efforts in the area should be strengthened, for instance in relation to local-authority tasks in rehabilitation and the establishment of healthcare centres. From the local-authority side, there is emphasis on the need for a change-over to new technology in the area in the form of OIO XML Web services (Public Information Online), SOA, data brokers and telemedicine to the home.

The choice of technology should be coordinated in future local-authority projects. There will probably be a need for a transition period, in which the existing EDIFACT technology is used, at the same time as XML-based Web services are developed and implemented.

The following possible specific projects may be mentioned:

- Continued expansion of existing standards in hospital-local authority communication.
- Start-up and expansion of local authority-GP practice communication.
- Development of standard for rehabilitation plan.
- Healthcare centre: survey of communication needs.
- Development of standards for electronic billing between local authority and hospitals.
- Joint medication project; integration of home care.
- Expansion of LÆ form communication with OIO XML and SOA technology.
Cooperation with Sundhed.dk

Since Sundhed.dk was launched at the end of 2003, MedCom has increasingly cooperated with this organisation, both in general and in connection with specific projects. The efforts of the two organisations to a large extent supplement and complement one another, and it is natural for the cooperation to become closer.

Current activities relate, for example, to access for doctors to laboratory results and to SUP (Standardised Extracts of Patient Data). In both cases relevant data will be available directly via Sundhed.dk, access to which otherwise has necessitated a separate VPN connection to the Healthcare Data Network.

The way in which the work is distributed in essence is that Sundhed.dk deals with display and user administration, and MedCom deals with standards, web services, implementation and expansion, while a third party – for example a county or local authority – is in charge of development in its own application.

It is a common challenge to ensure adoption and financing by counties, local authorities and other parties in relation to the specific joint projects. In addition, many relevant project opportunities can be seized on in connection with MedCom, for example:

- **Laboratory lookup via Sundhed.dk and the Healthcare Data Network.**
  The purpose is to give doctors access to test results from laboratories in the specialities of biochemistry, microbiology and pathology, using digital signature at Sundhed.dk.

- **Laboratory guidelines and the link portal.**
  Establishment of automatic link from record systems, lookup solutions and requesting systems to the laboratory guidelines located at Sundhed.dk.

- **Three-in-one communication with citizens.**
  Tree modules – appointment booking, date book and secure e-mail communication – can provide the patient with a direct and integrated communication interface in dialogue on a case.

- **Telemedicine at Sundhed.dk**
  The objective in the context of telemedicine is to utilise a number of existing functionalities and data at Sundhed.dk. In addition, the infrastructure surrounding Sundhed.dk and the underlying Healthcare Data Network will be able to support telemedicine cooperation, for example in the area of radiography.

The SUP/WEB-EPR project

In its latest annual report, dated October 2005, the EPR Observatory has judged that SUP/WEB-EPR (Standardised Extracts of Patient Data) faces a number of challenges over the next few years, when the method is to be moved from a pilot stage to an operational environment. In many cases, MedCom or the counties have launched initiatives to respond to the challenges, for instance with respect to performance (presentation of data) and stability.

SUP data were initially on a single database server. This has caused problems related to performance, and an inappropriate
backup method for the solution has been established at the same time. In order to improve performance, data are being divided between several database servers in the autumn of 2005. Searches across the counties result in high server loading, and it has therefore been decided that inter-county searches should by default be restricted to the most recent cases. This loading will obviously rise when more counties start to supply data.

Modernisation of SUP

The Association of County Councils has proposed that a technical modernisation of SUP to what is referred to as a WEB-EPR solution should be carried out. In the modernisation, the counties – over and beyond the communication between the hospitals – can provide access to EPR data for members of the public, GPs, specialists and the local authorities’ home care. This solution means that data are made available via Sundhed.dk using digital signature.

The newly established SUP access for healthcare professionals is additionally to be improved so that closer integration is created between the SUP databases and Sundhed.dk. The WEB-EPR may consequently become identical to the technical solution established for the clinics’ access to Medicinprofilen.

It appears that the formation of regions will benefit from a WEB-EPR solution, as the new regions will be able to achieve increased specialisation of treatment to take place at fewer hospitals with a subsequent need for greater communication across systems and old county boundaries.

In conjunction with mergers due to the local-authority reform, some PAS and EPR systems will have to be phased out. Old data from these systems can be stored in the SUP database, and access to them will be possible via the WEB-EPR solution.

WEB-EPR can additionally support a growing need for exchange across sectors. The solution can provide general practitioners and specialists with access to lookup in the hospitals’ EPRs and can open up new opportunities for communication with the local-authority sector. For example, the transfer of the area of rehabilitation to the local authorities will necessitate new communication between the hospitals and local authorities.

Finally WEB-EPR can make record information available to members of the public with digital signature.

Awards

On behalf of MedCom, Henrik Bjerregaard Jensen received the EU “Honourable Mention” award from European Commissioner Byrne and European Commissioner Likanen in 2003. In 2004, MedCom and Sundhed.dk was awarded the prestigious EU “eHealth Award” for the best proposal for the eHealth service of the future in Europe.

The medicines project

There have been regular contacts in recent years between the Danish Medicines Agency and
MedCom, primarily on prescriptions communication and testing of this communication. Two meetings have been held in the autumn of 2005 on functions and common interest with a view to the establishment of the prescription server and data communication with Medicoprofilen. Here MedCom can contribute great experience in the development of standards and the dissemination of communication solutions.

A large number of ideas and options have been discussed, but it is difficult to come up with specific suggestions for cooperation and development projects, as a number of activities relating to the prescription server have already been started and established.

Among the projects proposed, MedCom and the Danish Medicines Agency have, however, agreed that cooperation can be established on proposals 1, 2 and 3:

1. Implementation projects for the transfer of medication information between the hospitals’ medicines systems and PEM.
2. Connection of the Danish Medicines Agency’s prescription server to the Healthcare Data Network.
3. Information activity relating to use of the Danish Medicines Agency’s interactions database.
4. Continued development of prescription renewal standard from care systems and doctors’ systems.
5. Standard development in connection with transfer of information on medicines, including information on discontinuation between medicines database and doctors’ systems.

It is proposed that the content of the individual projects and their organisational position should be clarified in cooperation between the Danish Medicines Agency, the National Board of Health and MedCom. It is therefore proposed that:

- The projects be described by the parties referred to above in the first quarter of 2006. The parties may, according to need, bring in other interested parties in the area of medication.
- The project descriptions be submitted to the MedCom steering group in April/May 2006.
- The projects be implemented in the remaining MedCom V period.
- Projects relating to prescription renewal and information on medicines also be clarified between the parties and submitted to the MedCom steering group in April/May 2006.

Consolidation – standards and Healthcare Data Network

MedCom’s standards and the Healthcare Data Network are used in daily operation by nearly 3,000 GP practices, hospitals, pharmacies, local authorities etc., and by all IT suppliers in the healthcare sector.

As a result of this wide distribution, MedCom constantly receives patient referrals relating to use of the standards, testing, further expansion, connection to the Healthcare Data Network, certification of suppliers and development of code tables, statistics and other forms of documentation etc.

At the same time there are requirements for constant technical modernisation. This is the case, for example, as a result of the recommendations contained in the Ministry of Science, Technology and Innovation White Paper on change-over to a common service-oriented IT architecture for the public sector.

Against this background, there are proposals to establish a project area which is to focus on continuous consolidation, continued expansion of the communication and constant technical modernisation.

Relevant activities that can be mentioned are:

- Ad-hoc dissemination projects in selected areas of the primary sector.
  The Mini-IRSK project is completed. The aim is for all departments in all hospitals to be included by 1 April 2006. A dissemination project is established with regard to patient referrals.
  Efforts will continue to be made to extend WebReq to all counties.
  Electronic requesting from lab system to service lab under the development and implementation of individual modules for the sending of requests for these “samples” to service laboratories.

- Documentation, maintenance and enhancement of MedCom standards.
  The XML standards are completed and implemented in suitable pilot projects. New ones are developed for example in the area of medicines,
The local-authority area and for the linking of various point-of-care equipment to EPRs.

The EDIFACT standards are maintained and modernised with new fields. Supplementation with individual new standards. Web service standards are developed and tested in pilot projects in the laboratory area.

Topics for other development projects may be:

- Consolidation of the use of IUPAC codes.
- Development of standards and web services for nationwide common bloodbank systems.
- Use of MEDBIN for tele-dermatology should be speeded up.
- Standards for a new patient referral host for specialist referrals and physiotherapy referrals.
- New standards in the area of billing.
- Projects relating to standardisation in the ECG area with the establishment of common standards and development of ECG viewer as Open Source and application free of charge.
- Booking projects with SMS alert.

- Testing and certification of suppliers.
  Test tools are enhanced and documented. In this connection, more effort will be put into greater self-service in testing.

- Administration, as well as technical and security enhancement of the Healthcare Data Network.
  The Healthcare Data Network is the network of the whole healthcare sector and therefore a logical place to establish local projects and solutions in relation to electronic communication and information in the healthcare sector. The moment the VPN connection to the healthcare network is set up, local network administrators can freely connect relevant services to the network via the Healthcare Data Network's system of agreements. The connection of new services is described in the system of agreements.

In connection with the cooperation agreements with the linked institutions, MedCom faces a number of tasks in the period 2006–2007:

- Renewal of cooperation agreements with all associated parties, including in connection with the formation of regions.
- Revision of the financing model in connection with any activation of further options in the operating contract, following a specific decision by the MedCom steering group.
- Support in connection with new organisations joining.
- Analysis work relating to the correlation between the Healthcare Data Network and the future RegionsNet, in cooperation with the five future regions.
- Continued strengthening of the cooperation with Sundhed.dk on use of the Healthcare Data Network.
- Test function in relation to newly connected servers on the Healthcare Data Network.

- Automation and enhancement of the operational statistics.
  Monthly usage statistics and overview of connected solutions and their contents.
All doctors’ systems undergo testing for each of the MedCom standards relevant to a GP practice. The types of messages for which the doctors’ system in question is approved as of 1 November 2005, are highlighted in green in the chart below. Doctors’ systems that are not approved are marked in red on the messages concerned.

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<th>Yes</th>
<th>Yes</th>
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<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>No</th>
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<tr>
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<td>Disk.</td>
<td>Image diag. referral</td>
<td>Disk.</td>
<td>Specialist referral</td>
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<tr>
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<td>Pathology request</td>
<td>WebR</td>
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What can the counties do now?

Overview of EDIFACT messages in operation in the individual counties and CHC

Green indicates that the messages are underway and have been disseminated to more than 50% of possible messages. The numbers in the boxes indicate what percentage of messages are sent electronically.

Yellow indicates that the message has been started and is being disseminated.

Red indicates that the message has not yet been put into use.

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<td>90</td>
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<td>EDI-Spec. H-doctors %</td>
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<td>Discharge letter</td>
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<td>Outpatient letter</td>
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| 294 | 21 | 22 | 18 | 17 | 20 | 24 | 20 | 22 | 23 | 17 | 20 | 18 | 15 | 14 | 18 | 2 | 3 | 1 |
Local-authority suppliers – who can do what?

The electronic communication to and from the local-authority home-care service involves both KMD Sygehusopphold (S&A) and electronic care record (ECR). The chart shows the implementation status of MedCom standards in these systems.

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<th>M-Care/LyngsoeSystem</th>
<th>Ramboll Care</th>
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Local authorities-hospital communication

Number of electronic messages between local authorities and hospitals in October 2005.

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Before the institution can use the VPN connection to the Healthcare Data Network, it is necessary to enter into bilateral agreements with other interested parties which are connected to the Healthcare Data Network’s node. The bilateral agreements establish on IP addresses who are allowed to attain connection with one another and for what purpose. The IP agreements are technically entered into with the server to which access is to be obtained/data are to be exchanged.

### Trend in number of IP agreements

![Trend graph showing the number of IP agreements by month from January 2003 to November 2005.](image)

### SUP statistics

#### Number of consents per month

Monthly statement of number of consents given, i.e. patients on whom clinical information is sought.

- **South Jutland**
- **Århus**
- **Viborg**
- **Veje**
- **Funen**
The Primary Group

The purpose of the Primary Group is to monitor and carry out Med-Com projects under the Internet strategy and in the area of local authorities. In addition, it fulfils tasks in relation to problem-solving and enhancement in conjunction with the EDI communication already in existence. The Group consists of project leaders and other key individuals from counties, CHC, local authorities and other organisations in the healthcare sector.

- Anne-Marie Falch, North Jutland County
- Jens Grønlund, Viborg County
- Hans Henrik Bøttger, Århus County
- Gert Fjord Olesen, Ringkjøbing County
- Tove Charlotte Nielsen, Vejle County
- Bente Christensen, Vejle County
- Kim Østerbye, Ribe County
- Lone Behnfeld, South Jutland County
- Tove Lehrmann, Funen County
- Lisbeth Jørgensen, Funen County
- Birgit Nielsen, Storstrøm County
- Jette Malling Rosbæk, West Zealand County
- Simon Krogh, West Zealand County
- Jens Henning Rasmussen, Roskilde County
- Lene Meyer Grosen, Frederiksborg County
- Søren Lorentzen, Frederiksborg County
- Sue Bech, Copenhagen County
- Jan Stokkebro Hansen, Copenhagen County
- Susanne Larsen Grøntoft, Copenhagen Hospital Corporation
- Peter Pedersen, Copenhagen Hospital Corporation
- Rose-Marie Jensen, Bornholm Regional Municipality
- Merete Halkjær, Copenhagen Local Authority
- Anne Danborg, Skibby Local Authority
- Helle Stockfleth Olsen, Statens Serum Institut
- Niels Hornum, Copenhagen General Practitioners’ Laboratory
- Karin Argir, Capio Diagnostik
- Karin Rokvist, Capio Diagnostik
- Joan Madsen, CSC Scandihealth
- Michael Johansen, WM-data
- Karin Husballe Munk, Lyngsoe Systems
- Ivan Andersen, Ascott Software
- Thomas Wejs Møller, Association of County Councils
- Susanne Duedal Pedersen, National Board of Health
- Jens Rastrup Andersen, Sundhed.dk
- Ronnie Eriksson, Sundhed.dk
- Claus Nielsen, National Association of Local Authorities
- Søren Bonde-Andersen, Copenhagen Local Authority
- Henrik Bruun, Danish Pharmaceutical Association
- Holger Pind Probst, Storstrøm County
- Leif Hagen Christiansen, Copenhagen County
- Claus Duedal Pedersen, MedCom
- Dorthe Skou Lassen, MedCom
- Finn Roth Hansen, MedCom
- Gitte Henriksen, MedCom
- Henrik Bjerregaard Jensen, MedCom
- Ib Johansen, MedCom
- Iben Søgaard, MedCom
- Jens Rahbek Nørgaard, MedCom
- Karin Dekjær, MedCom
- Lars Hulbæk, MedCom

MedCom’s infrastructure group

The aim of MedCom’s permanent infrastructure group is to monitor the operation of the Internet-based Healthcare Data Network and ensure relevant technical and safety enhancement of the network. The infrastructure group is an advisory body for the MedCom steering group.

- Erik Jacobsen, DataGruppen MultiMed
- Freddy Christensen, EG Datainform
- Ib Lucht, UNI-C
- Martin Bech, UNI-C
- Torben Kvistgaard Jensen, PROGRATOR
- Sten K. Christensen, KMD
- Jan Petersen, National Board of Health
- Ronnie Eriksson, Sundhed.dk
- Ole Widriksen, Sundhed.dk
- Claus Nielsen, National Association of Local Authorities
- Søren Bonde-Andersen, Copenhagen Local Authority
- Henrik Bruun, Danish Pharmaceutical Association
- Holger Pind Probst, Storstrøm County
- Leif Hagen Christiansen, Copenhagen County
- Claus Duedal Pedersen, MedCom
- Finn Roth Hansen, MedCom
- Henning Voss, MedCom
- Iben Søgaard, MedCom
- Jens Rahbek Nørgaard, MedCom
- Lars Hulbæk, MedCom
- Peder Illum, MedCom
MedCom’s local-authority group

- Carsten Stanley Mortensen, Aalborg Local Authority
- Kirsten Skovrup, Aalborg Local Authority
- Isabelle Andersen, Læsø Local Authority
- Jonna Refstrup, Ørbæk Local Authority
- Alice Kristensen, Svendborg Local Authority
- Søren Skafte Jensen, Nakskov Local Authority
- Agnete Seidelin, Roskilde Local Authority
- Margit Kure, Skovbo Local Authority
- Marianne Strand, Stenlose Local Authority
- Kim Snekerup, Frederiksværk Local Authority
- Merete Halkjær, Copenhagen Local Authority
- Grethe Simonsen, Funen Svendborg Hospital
- Anne-Marie Falch, North Jutland County
- Tine Korsholm, Ringkøbing County
- Kim Østerbye, Ribe County
- Maja Stephansen, Storstrøm County
- Jens Henning Rasmussen, Roskilde County
- Lene Meyer Groen, Frederiksborg County
- Susanne Larsen Grøntoft, Copenhagen Hospital Corporation
- Claus Nielsen, National Association of Local Authorities
- Verner Hansen, National Board of Social Services
- Gitte Hansen, Ministry of Finance
- Dorthe Skou Lassen, MedCom
- Henning Voss, MedCom
- Iben Søgaard, MedCom

MedCom’s SUP steering group

- Ole Schou Rasmussen, North Jutland County
- Ole Filip Hansen, Viborg County
- Søren Thing Pedersen, Århus County
- Vera Ibsen, Vejle County
- Morten Hansen, Vejle County
- Dorte Wølde, Vejle County
- Esben Dalsgaard, Ribe County
- Claus Toftgaard, South Jutland County
- Rikke Viggers, Funen County
- Peer Fombok Smed, CSC Scandihealth
- Thomas Wejs Møller, Association of County Councils
- Jens Rastuer Andersen, Sundhed.dk
- Dorthe Skou Lassen, MedCom
- Finn Roth Hansen, MedCom
- Henrik Bjerregaard Jensen, MedCom
- Iben Søgaard, MedCom
- Jens Rahbek Nørregaard, MedCom

MedCom’s Mini-IRSK project leader group

- Anne Kjærluff, West Zealand County
- Bente Christensen, Vejle County
- Gert Fjord Olesen, Ringkjøbing County
- Gitte Ditløv, Copenhagen County
- Grethe Annie Jensen, Frederiksborg County
- Hanne Søndergaard, North Jutland County
- Hans Henrik Bøttger, Århus County
- Helle Stockfleth Olsen, Statens Serum Institut
- Jane Boss, Bornholm Regional Local Authority
- Jens Henning Rasmussen, Roskilde County
- Joan Madsen, CSC Scandihealth
- Karin Argir, Capio Diagnostik
- Kim Bjørn Hansen, WM-data
- Lisbet Ramsvatn, Frederiksborg County
- Lisbeth Jørgensen, FynCom
- Lise Tangaa, Ribe County
- Lone Behnfeld, South Jutland County
- Maja Stephansen, Storstrøm County
- Niels Hornum, KPLL
- Ole Filip Hansen, Viborg County
- Peter Pedersen, Copenhagen Hospital Corporation
- Pia Dandanell, West Zealand County
- Rose-Marie Jensen, Bornholm Regional Local Authority
- Sue Bech, Københavns Local Authority
- Søren Rosenørn Jakobsen, ACURE
- Søren Lenau, Bornholm Regional Local Authority
- Gitte Henriksen, MedCom
- Ib Johansen, MedCom
- Iben Søgaard, MedCom
- Tove Kaae, MedCom
Danish Centre for Health Telematics

Centre manager Henrik Bjerregaard Jensen
MedCom
Tel. direct 6543 2010
hbi@health-telematics.dk

Deputy manager Ib Johansen
MedCom
Tel. direct 6543 2019
ijo@health-telematics.dk

Consultant Niels Rossing
International
Tel. direct 6543 2034
nr@health-telematics.dk

Project assistant Jennie Søderberg
International
Tel. direct 6543 2014
jsb@health-telematics.dk

Consultant Henning Voss
International/MedCom
Tel. direct 6543 2017
hvo@health-telematics.dk

Consultant Claus Duedal Pedersen
International/MedCom
Tel. direct 6543 2029
cdp@health-telematics.dk

Consultant Jens Rahbek Nørgaard
MedCom
Tel. direct 6543 2028
jr@health-telematics.dk

Consultant Jacob Glasdam
MedCom
Tel. direct 6543 2016
jag@health-telematics.dk

Secretary Anita Folleraas
MedCom
Tel. direct 6543 2013
anf@health-telematics.dk

Secretary Pia Reinhardt Juel
Medcom
Tel. direct 6543 2022
prj@health-telematics.dk

Project assistant Gitte Henriksen
MedCom
Tel. direct 6543 2015
pgh@health-telematics.dk

Secretary Iben Søgaard
Medcom
Tel. direct 6543 2021
ibs@health-telematics.dk

Consultant Finn Roth Hansen
MedCom
Tel. direct 6543 2027
frh@health-telematics.dk

Consultant Lars Hulbæk
MedCom/Telemedicine
Tel. direct 6543 2031
lhbf@health-telematics.dk

Consultant Dorthe Skou Lassen
MedCom/FynCom
Tel. direct 6543 2023
dsl@health-telematics.dk

Consultant Karin Demkjær
MedCom/FynCom
Tel. direct 6543 2024
kde@health-telematics.dk

Deputy chief of section Tove Lehrmann
FynCom
Tel. direct 6543 2020
tle@health-telematics.dk

Consultant Rikke Viggers
FynCom
Tel. direct 6543 2033
riv@health-telematics.dk

Secretary Karina Hasager
FynCom/Telemedicine
Tel. direct 6543 2012
khs@health-telematics.dk

Consultant Lisbeth Jørgensen
FynCom/Telemedicine
Tel. direct 6543 2011
lij@health-telematics.dk

House assistant Alis Jørgensen
Danish Centre for Health Telematics
Tel. direct 6543 2018

Part-time consultants:

Peder Illum
MedCom
Tel. direct 6543 2035
pih@health-telematics.dk

Lene Norgren Hansen
MedCom
Tel. direct 6543 2026
lno@health-telematics.dk

Margit Rasmussen
MedCom
Mobile 2348 6914
mar@health-telematics.dk

Bente Falk
FynCom
Mobile 2963 7713
bfa@health-telematics.dk

Tove Kaae
MedCom
Tel. direct 6543 2026
tok@health-telematics.dk
MedCom IV projects

The local-authority projects

Hospital/Local Authority
Medical practice-home care
Internet strategy
Infrastructure project
Lab lookup via Sundhed.dk
X-ray lookup
Teledermatology
Collaboration
Videoconferencing
WebReq – Clinical Biochemistry
WebReq – Microbiology
WebReq – Pathology
SUP and Mini-IRSK

Danish Centre for Health Telematics

FUNEN COUNTY
Rugårdsvej 15, 2.sal, 5000 Odense C
Telephone 6543 2030, Fax 6543 2050
www.medcom.dk

Ministry of the Interior and Health
Slotsholmsgade 10-12, 1216 Copenhagen K
Telephone 7226 9000, Fax 7226 9001
www.im.dk