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Point-of-Care US: A New Service Delivery Model

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Medical care in the Netherlands is organised through a gatekeeper, the general practitioner (GP). Originally, the GP would take care of the entire spectrum of medical care personally, in his or her office, often aided by a partner. When time and paperwork constraints made this more difficult, organisations sprang up that centralised medical diagnostics services regionally for groups of GPs.
In the Netherlands, eight such regional organisations offer a broad package of support, such as blood tests, visualising retina tests, electrocardiograms, lung function tests and biometrics. Each region developed a well-organised infrastructure that picks up blood samples and delivers laboratory results efficiently and in a timely manner.
In the last two decades imaging, particularly screening indications, became an issue for GPs as waiting lists in the regional hospitals grew, leading to delay in diagnosis. GPs increasingly wanted immediate and easily accessible imaging services, ranging from conventional radiographs to ultrasound. Demand for these services grew such in the last decade that it became a priority of the eight regional diagnostic centres.

Materials and Methods

One of the diagnostic GP support organisations, SHO, currently serves approximately 700 care providers. Increasingly GPs needed imaging support in making the decision to refer patients to hospital or not. In 2008 the wait for an ultrasound appointment could be up to two to three weeks or more in the local community hospitals.
A business case was developed to offer point-of-care (POC) ultrasound capability within 24 hours of the request. A uniform requisition was developed, appointments were to be made centrally and a standard template ultrasonographic (US) exam was coupled to a clinical indication. The aim was to serve many GP practices with a hub-and-spoke model. The hub is the place of US investigation at or within easy reach of the GP practices (spokes). If a practice or group of practices could guarantee a minimum of 10 requests per half day, we could offer this POC service on a certain day each week to fulfill those requests. We would bring the US equipment and operators.
Transporting the US equipment was easy, as the infrastructure was already in place for transporting medical diagnostic equipment, blood samples and other laboratory tests. We simply 'piggybacked' the US equipment on to existing routes so that five days a week up to 36 different locations could be served. Depending on the number of requests US equipment is delivered to each site prior to the start of the appointments, either morning or afternoon, to be met by an ultrasonographer. The ultrasonographer performs the exams following a standardised protocol, fills out a preliminary report using a template (American College of Radiology (ACR)-based), and takes care of add-on exams if needed. Every day a radiologist is responsible for providing back up to the sonographer. The radiologist can be reached by telephone and is able to view the images via remote on demand.

Staffing and Equipment

The ultrasonographers are employed part-time, and benefit from fixed working days and no night shifts. A cadre of radiologists was recruited with virtually the same 'benefits': part-time, work from home the majority of time, paid by the case.
The equipment consists of six ultrasound units, five mobile and one laptop. There is a central reservation number and all scheduling is done centrally. Paperless, structured indications and structured reporting digitally handled allow for timely and efficient reporting.
The business plan was based on bringing the imaging to the patient, and enabling a decision on whether the exam was normal or not. In the latter instance, further imaging might need to be considered, and the majority of clinicians very much appreciated suggestions as to what might be indicated to further elucidate the abnormality found. We conduct standard examinations of the abdomen, kidneys, pelvis, neck, scrotum, musculoskeletal (MSK) indications, such as develomental dysplasia of the hip, shoulder, elbow and knee, and soft tissues including ultrasound of breast lesions for patients under 21 years of age.
Standardised reporting is performed by the ultrasonographer on site, using an ACR-based template. This is saved as a preliminary report on the central server. These are then reviewed and finalised near instantly (online) by the radiologist of the day. The entire work list is finished by 9:00 pm local time so that the referring doctor has an authorised report in his/her possession by 7:00 am the next morning, by an Electronic Data

Interchange For Administration, Commerce and Transport (EDIFACT) message, a secured encrypted mail.

Quality Control

Quality control measures consist of following protocols, standardised reporting and radiologists in a peer reviewed setting. The radiologist on call also adheres to a 'visitation' schedule, spending the day supervising the sonographers. Quarterly feedback from the GPs has been actively sought. This includes attending their local meetings where the imaging is critically evaluated as to timeliness, appropriateness and ease of access.

Results

The objective is to prevent medicalisation, ie weed out those patients that do **NOT** need further therapy. bringing the ultrasound study **TO** the patient. We have succeeded in this. The advantage of POC ultrasound examinations is that patients can stay close to home, and in a large percentage of patients extramural, virtually immediate care can be given. Inpatient care after all is more expensive and time-consuming. Implementation of this system did not go completely without objections. The local hospitals have seen their ultrasound volume decrease (we do approximately 8,500 exams a year). From time to time the local hospitals would change their hours of operation and use other methods trying to capture this lost population, but they never succeeded. Nationally, the Dutch radiological society has clinical practice guidelines that insist on radiologists being present at every exam and that ultrasonographers should not work on their own (Radiological Society of the Netherlands 2015).
We have consistently maintained that a well-trained, certified ultrasonographer is basically the right hand of a radiologist and therefore should be able to practise independently with occasional supervision. Ultrasound is a risk-free, complication-free imaging modality. Supervision is not physically present, but is available both by phone and on remote report station.
When we were just starting out, collaboration with the hospitals was difficult or even impossible. Examinations were deemed suboptimal and results were challenged. After several years there is now a noticeable change. We are now getting feedback on the given diagnoses and positive comments about the structure of the reports. We have taken these issues seriously. Upon review, the consequences ranged from updating the MSK protocols for reporting joint findings to proving that at most findings could be inferred, and consequently none have affected clinical care. We continuously work with referring specialists to optimise our reporting clarity. For example, some clinicians appreciate advice on the need to follow up, others do not. This has led to our reporting being able to be targeted, a service that is much appreciated.
It is interesting to note that more than half of beginning medical students in the United States get a tablet with an ultrasound transducer attached to it instead of the time honoured stethoscope on their first day of medical studies. The University of Rochester will start this with their next incoming class, September 2016. Learning anatomy, also quick US evaluation in the emergency room or on the clinical ward is becoming commonplace. US has come of age….

Conclusion

Overall satisfaction with this point-of-care ultrasound organisation has been high, as our ever increasing annual totals illustrate. We are growing, and we have been asked to perform these services in three other regional organisations. Putting the patient first has been a rewarding endeavour.

Key Points

- General practitioners and patients in the Netherlands benefit from a regionalised point-of-care ultrasound (US) service.
- The service delivers US equipment to each centre, where an ultrasonographer receives it.
- There is a uniform requisition, appointments are made centrally and a standard template ultrasonographic exam is coupled to a clinical indication.
- The supervising radiologist is available by phone and can view images remote on demand (web-streaming in progress).
- Feedback on the service is good; reports are received in a timely manner, and patients can book convenient appointments, often within 24 hours.

See Also: Point-of-Care Ultrasound: Potential and Limitations

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