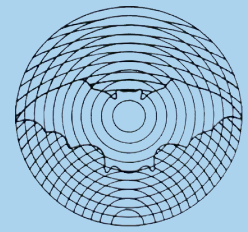


Dansk Ultralyddiagnostisk Selskab



ACTIONCARDS – one-page instructions framing POCUS use for family medicine physicians

Point-of-care ultrasound (POCUS) is widely used in many clinical specialties including family medicine [1]. The potential use in family medicine includes a great variety of clinical situations and related scanning modalities [2, 3]. However, for many scanning projections the frequency with which the scan is performed is low [4–6] making it difficult to develop routine and maintain scanning competence. Furthermore, the low pre-test probability of disease and less severe cases seen in patients in primary care may challenge the ability to recognize pathology on images. In addition, the working conditions in office-based family medicine leave little room for practice due to the timeframe of the consultation [7] and the lack of opportunities for collegial back-and-forth discussion and proctored scans.

There is no evidence or consensus as to how general practitioners (GPs) are best trained [8]. In Denmark, a group of researchers at Center for General Practice at Aalborg University and GPs organized in the Danish Society for Ultrasound in General Practice (DAUS) have developed a longitudinal basic POCUS training course, accounting for the specific learning challenges in office-based family practice. This basic ultrasound course was developed based on previous studies exploring the educational needs of GPs [5, 8–10].

The learning steps from novice to expert in relation to skills development have been explored extensively in health care research [11]. Educational research has described a need for structure and scaffolding in the beginning of a learning process to provide

a safe environment for developing skills [12, 13]. To provide scaffolding, guidance and support during the learning, *action cards* were developed framing POCUS examinations to general practice. For a specific POCUS application the *action cards* state: (1) in which clinical situations the POCUS examination can be used, (2) which transducer and pre-set is recommended, (3) how the POCUS examination is performed, (4) How POCUS findings should be interpreted, (5) common pathological findings, (6) possible errors and common mistakes, and (7) how to integrate findings in a clinical context (► Fig. 1).

The *action cards* are used repeatedly during training: First, as preparatory reading prior to the hands-on training sessions; second, for demonstration and instruction during training sessions, and third, to support course participants at home in the clinic in-between training sessions. This repetitive use of the *action cards* supports the participants' development of both embodied and embodied knowledge [9].

The *action cards* were evaluated in a master thesis [14]. Eight GPs were interviewed about the use of *action cards* as a support tool when scanning in their general practice. Overall, they found them very useful in facilitating the use of POCUS. The *action cards* offered the opportunity to prepare for a scan or brush-up, provided guidance and corrections in case-of-doubt, and facilitated the completion of examinations as well as increased participants' confidence in the results.

By framing relevant POCUS examination to the general practice setting, *action cards* may create a uniform understanding of POCUS use in primary care and thereby give the encoded and embedded knowledge that the healthcare system needs for a successful implementation of POCUS in primary care [9].

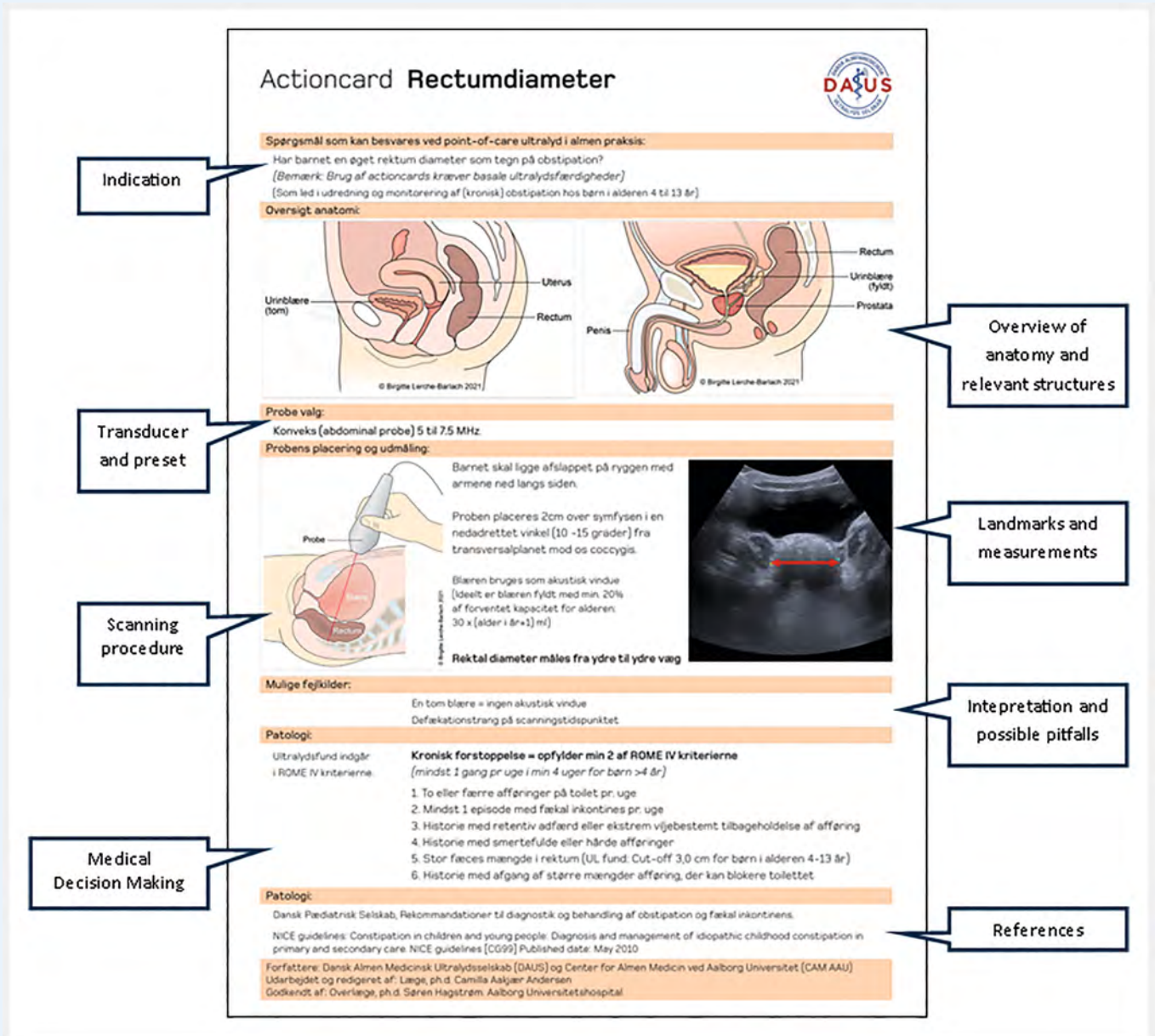
The *actioncards* are freely available in Danish on the Danish Doctors Handbook at <https://www.sundhed.dk/sundhedsfaglig/laegehaandbogen/sundhedsoplysning/sundhedsoplysning/ultralyd-i-almen-praksis/>. They have been developed by GPs and reviewed by a relevant specialists prior to the final evaluation process and publication in the Doctors Handbook. For ultrasound courses, the *actioncards* are supplemented with small instructive videos following the same structure.

Using *action cards* for POCUS training of GPs supports the GPs scanning technique and increases transparency about what and how GPs perform POCUS scans. We cordially invite others, who may be interested, to adapt the idea and we will be happy to assist in translations.

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► Fig. 1

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