



IT-Solutions for
Animal Production



ICAR Udder health meeting at the
ICAR 2017 conference on 14-16 June 2017 in Edinburgh, UK



Standardization of health data recording (central health key)

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Outline

- ❖ background / context:
the role of direct health traits and its development
- ❖ ICAR health guidelines
 - ❖ data sources, logistics, ...
 - ❖ challenges
 - ❖ recording standard (appendix)
- ❖ working documents
 - ❖ status quo
 - ❖ plans



THE GLOBAL STANDARD
FOR LIVESTOCK DATA
Functional Traits Working Group

Background / context

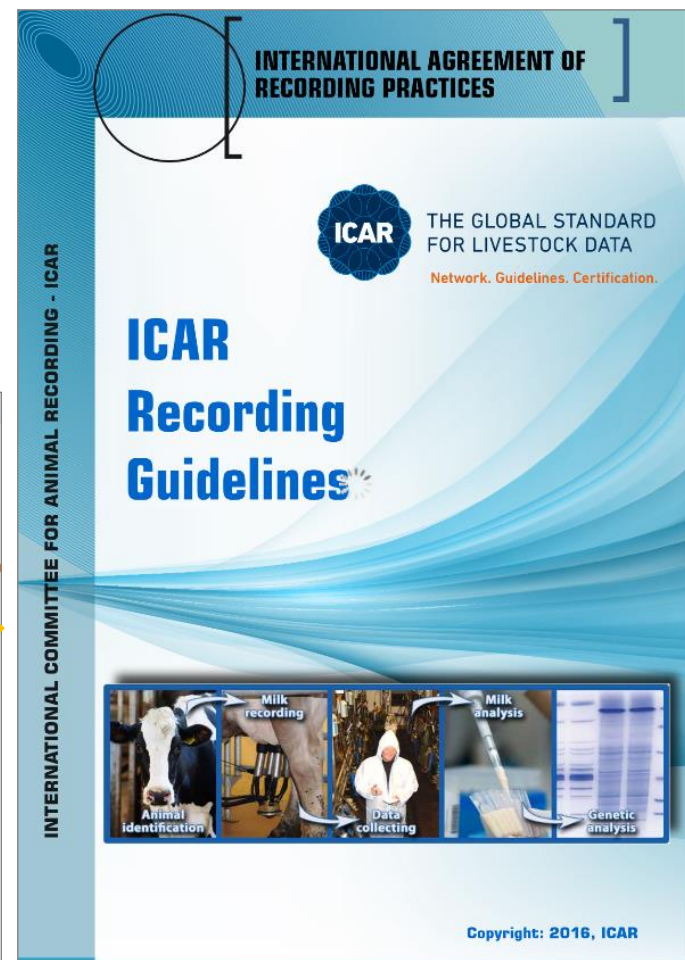
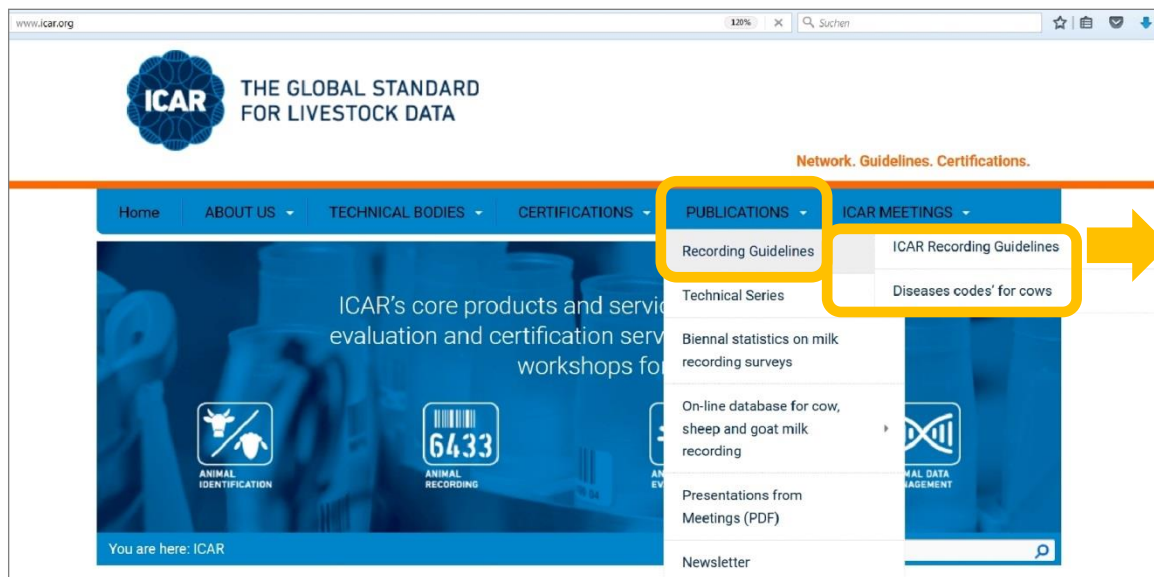
- continuous increase of the importance of functional traits in general, and of health traits in particular, in the dairy sector
 - management
 - breeding
 - need for new traits and improved / refined phenotypes in breeding
 - methodological development providing new opportunities also and particularly for challenging traits
 - worldwide move from indirect to direct health traits
- **Guidelines for recording, evaluation and genetic improvement of health traits (ICAR WGFT 2013)**



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ICAR Health guidelines

- integral part of the ICAR recording guidelines: section 7.1



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ICAR Health guidelines: section 7.1

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International Agreement of Recording Practices

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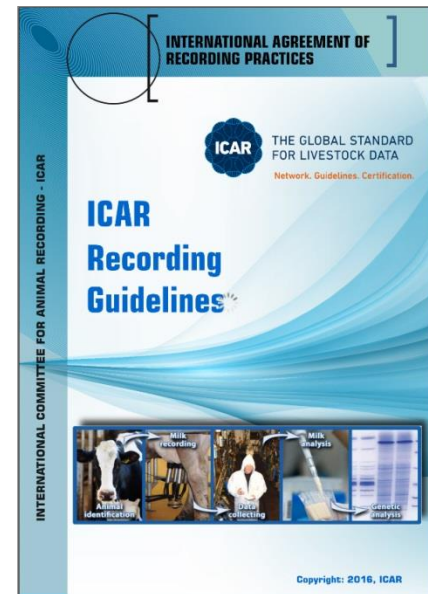
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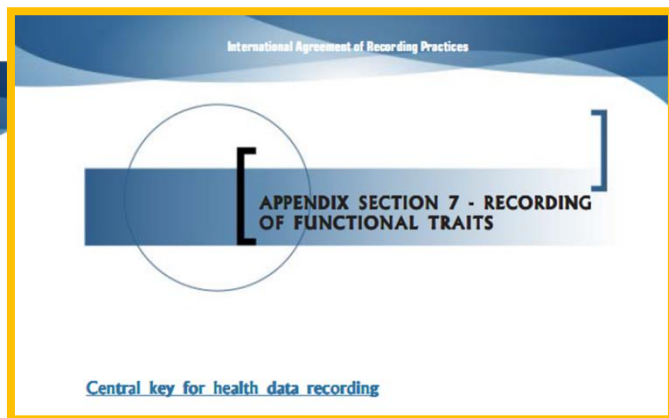
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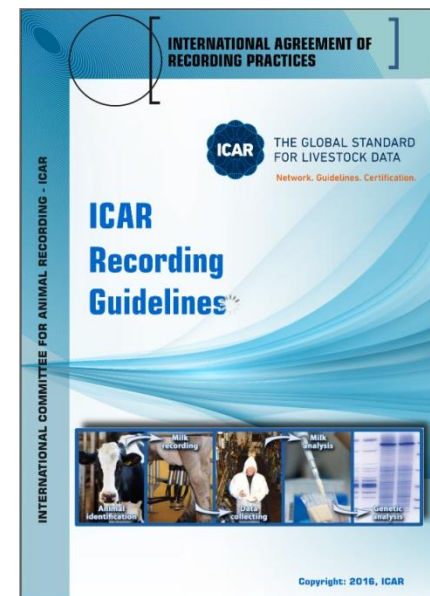
ICAR Health guidelines: appendix section 7



1.12.07.03.02	Dermatitis at the medial forequarters of the udder	Anterior udder sores; necrotic inflammation of the skin at the anterior portion of the udder between the forequarters and adjacent abdominal skin
1.12.07.03.03	Udder furunculosis	Disseminated deep purulent inflammation of hair follicles and sebaceous glands at the udder
1.12.07.03.04	Pseudocowpox (paravaccinia)	"Milkier's nodes"; infection with parapoxvirus bovis 2
1.12.07.04	Udder edema	Accumulation of serous fluid in the udder tissue
1.12.07.04.01	Prepartal udder edema	Udder edema before parturition, calving-related accumulation of serous fluid in the udder tissue
1.12.07.04.02	Chronic udder edema (recurrent udder edema)	Chronic and repeated accumulation of serous fluid in the udder tissue
1.12.08	Disturbance of milk flow	
1.12.08.01	Bloody milk	Blood-contamination of milk due to intra-mammary rupture of blood vessels
1.12.08.02	Failure of milk ejection	
1.12.08.03	Disorders of the ducts of the udder	
1.12.08.03.01	Galactophoritis	Inflammation of the ducts of the udder
1.12.08.03.02	Teat stenosis	Stenoses in the ducts of the udder
1.12.08.03.03	Disorders of the streak canal of the teat	
1.12.09	Teat endoscopy	
1.12.99	Other disorders of the udder (except mastitis)	



Code	Technical term	Synonyms; explanations
1.13.	Mastitis (inflammation of the mammary gland)	
1.13.01.	Mastitis - descriptive	Mastitis by type of inflammatory signs
1.13.01.01.	Disturbance of milk secretion	Non-infectious increase of somatic cells in the milk
1.13.01.02.	Mastitis catarhalis acuta (acute catarhal mastitis)	
1.13.01.03.	Mastitis catarhalis chronica (chronic catarhal mastitis)	
1.13.01.04.	Mastitis haemorrhagica (hemorrhagic mastitis)	Inflammation of the mammary gland with bleeding and blood-admixture to the milk
1.13.01.05.	Mastitis necrotica (necrotizing mastitis)	Inflammation of the mammary gland with tissue necrosis and admixture of putrid tissue to the milk
1.13.01.06.	Mastitis apostematosa (purulent mastitis)	Inflammation of the mammary gland with abscess formation and purulent tissue degradation
1.13.01.07.	Mastitis interstitialis non purulenta (non-purulent interstitial mastitis)	Non-purulent inflammation of the connective tissue of the mammary gland
1.13.01.08.	Mastitis granulomatosa (granulomatous mastitis)	Inflammation of the mammary gland with granulomatous tissue degradation
1.13.01.09.	Mastitis phlegmonosa / Mastitis acuta gravis (phlegmonous mastitis)	Severe inflammation of the mammary gland with necrosis of secretory tissue and extensive accumulation of serous fluid in the udder
1.13.01.10.	Mastitis catarhalis subclinica (subclinical mastitis)	Infectious inflammation of the mammary gland without clinical signs
1.13.02.	Mastitis - etiological	Inflammation of the udder - with isolation of pathogenic agents
1.13.02.01.	Mastitis with isolation of Streptococci (Sc.)	
1.13.02.01.01.	Mastitis with isolation of Sc. agalactiae (ScB)	
1.13.02.01.02.	Mastitis with isolation of Sc. dysgalactiae (ScC)	
1.13.02.01.03.	Mastitis with isolation of Sc. uberis (ScE)	
1.13.02.01.04.	Mastitis with isolation of other Streptococci	
1.13.02.02.	Mastitis with isolation of Micrococci	



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ICAR Health data conference

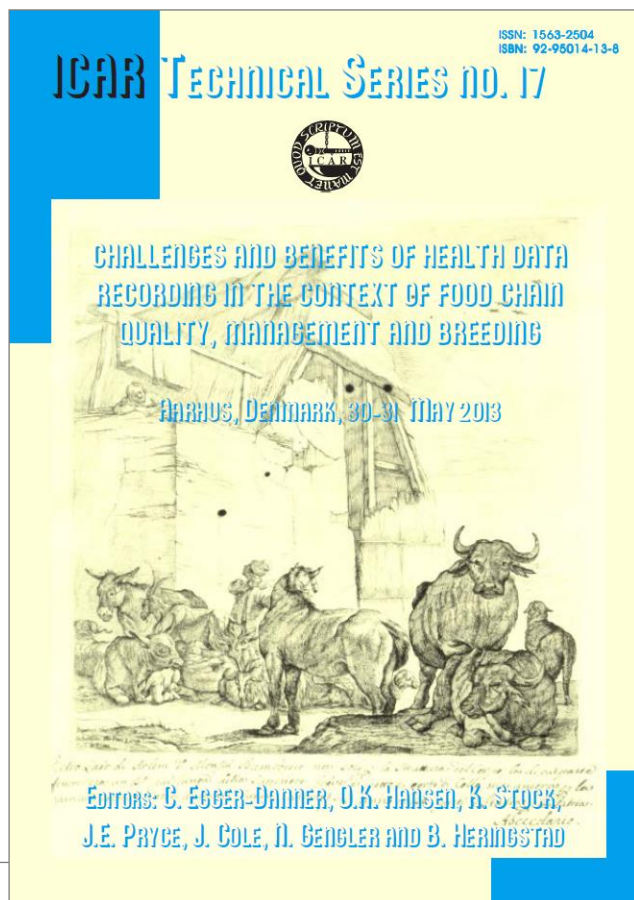
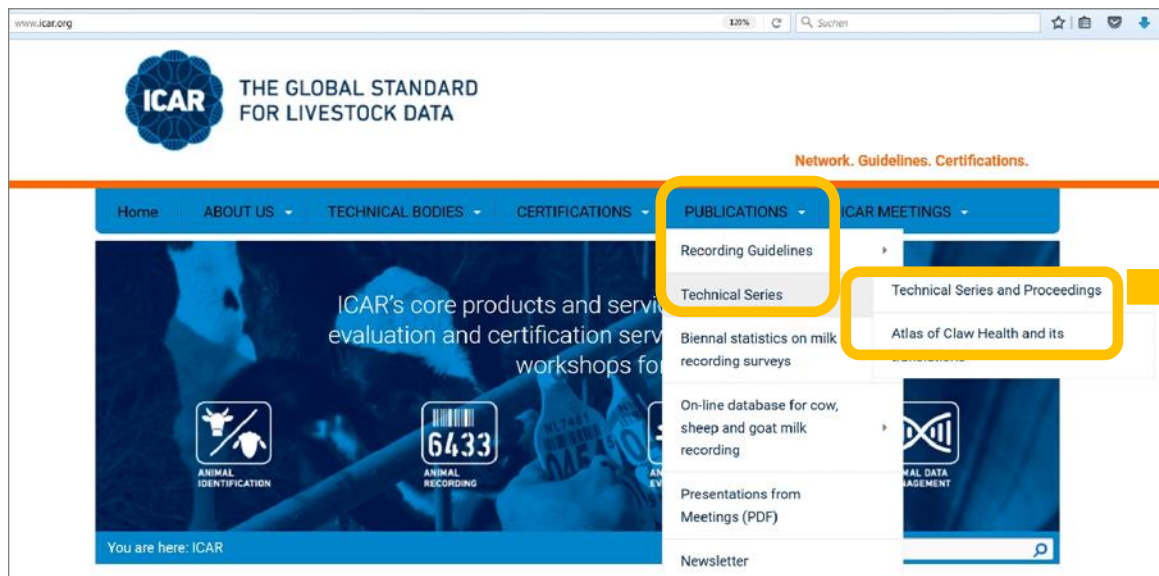


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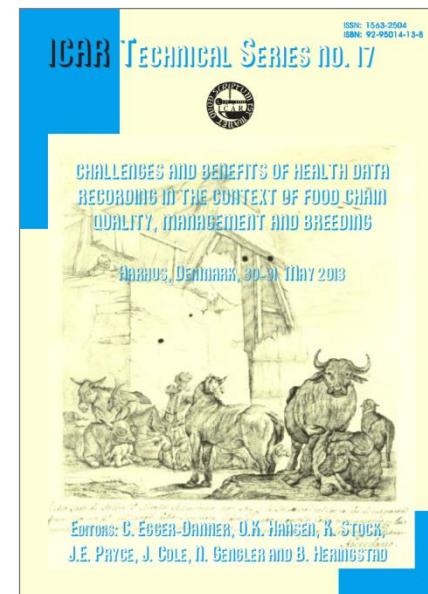
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ICAR Health data conference: results

- need for international standardization
- multidisciplinary approaches

- Easy care, healthy, "invisible" cow is what farmers want.
- The aim is to have minimum effort for recording with maximum benefit for herd improvement.
- Multidisciplinary use of farm and veterinary data will help to achieve this aim.
- Clear agreements concerning data ownership and use are needed.
- Legal regulations may be supportive for establishing health monitoring systems, but motivation of the stakeholders involved is the key factor for long-term success.
- Disease information such as mastitis, infertility, lameness, metabolic disorders are necessary for targeted improvement of animal health which is in accordance with the EU-strategy "Prevention is better than cure".
- Data quality and data quantity assurance measures are very important.
- There is a need for international standardization.
- Electronic devices and automated systems may contribute to future solutions.
- Each country has to find solutions fitting their circumstances.
- We can do better when we work together (multidisciplinary, multi-country approaches)!

Main outcomes



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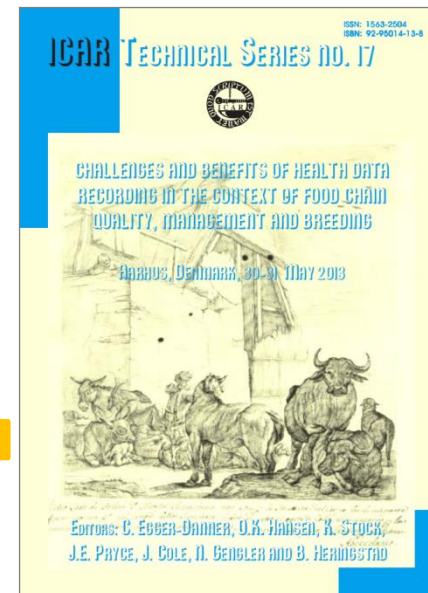
Standardization of health data

➤ comprehensive key ...

Table 1. Disease categories and major sub-categories with respective numbers of more specific items in the key for health data recording included as annex in the ICAR guidelines for Recording, Evaluation and Genetic Improvement of Health Traits (version 1.2, April 28, 2013).

Code	Technical term	No. of items
1.	Organ diseases	539
1.01.	Diseases of skin, subcutis and coat	27
1.02.	Diseases of the trunk	22
1.03.	Horn diseases	11
1.04.	Diseases of the lymphoid system	8
1.05.	Diseases of the cardiovascular system	49
1.06.	Diseases of the respiratory tract	46
1.07.	Diseases of the digestive tract	108
1.08.	Diseases of the urinary tract	23
1.09.	Diseases of the locomotory apparatus	63
1.10.	Claw diseases	56
1.11.	Diseases of the central nervous system and the sensory organs	40
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5.	Parasitoses (parasite infestations)	42
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9.	Health-related information not representing diagnoses	45

* except local infections of udder and claws



Standardization of health data. ICAR guidelines including health key

K.F. Stock¹, J. Cole², J. Pryce³, N. Gengler⁴, A. Bradley⁵,
L. Andrews⁶, B. Heringstad⁷ and C. Egger-Danner⁸



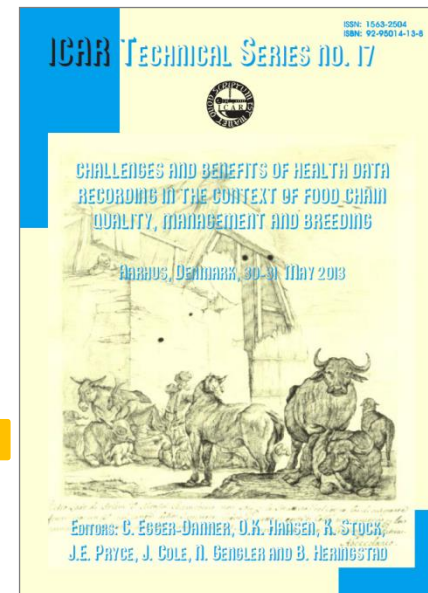
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Standardization of health data

- comprehensive key with clear hierarchy
 - suitability for different target groups (very simplified to highly specific recording)
 - compatibility with specific keys

Table 2. Examples for health data recording with different specificity via the comprehensive key for health data recording included as annex in the ICAR guidelines for Recording, Evaluation and Genetic Improvement of Health Traits

Code	Technical term
1.	Organ diseases
1.05.	Diseases of the cardiovascular system
1.05.06.	Disorders of blood vessels
1.05.06.02.	Shock (acute circulation insufficiency)
1.05.06.02.01.	Hypovolemic shock
2.	Reproduction disorders in females
2.05.	Female infertility
2.05.02.	Ovarial infertility
2.05.02.04.	Ovarial cysts
2.05.02.04.02.	Luteal cystic ovary disease
6.	Metabolic diseases and deficiencies
6.03.	Disturbances of mineral balance
6.03.01.	Disturbances of calcium and phosphorus balance
6.03.01.01.	Parturient paresis (milk fever)
6.03.01.01.02.	Parturient coma / Stage 3 of parturient paresis



Standardization of health data. ICAR guidelines including health key

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L. Andrews⁶, B. Heringstad⁷ and C. Egger-Danner⁸



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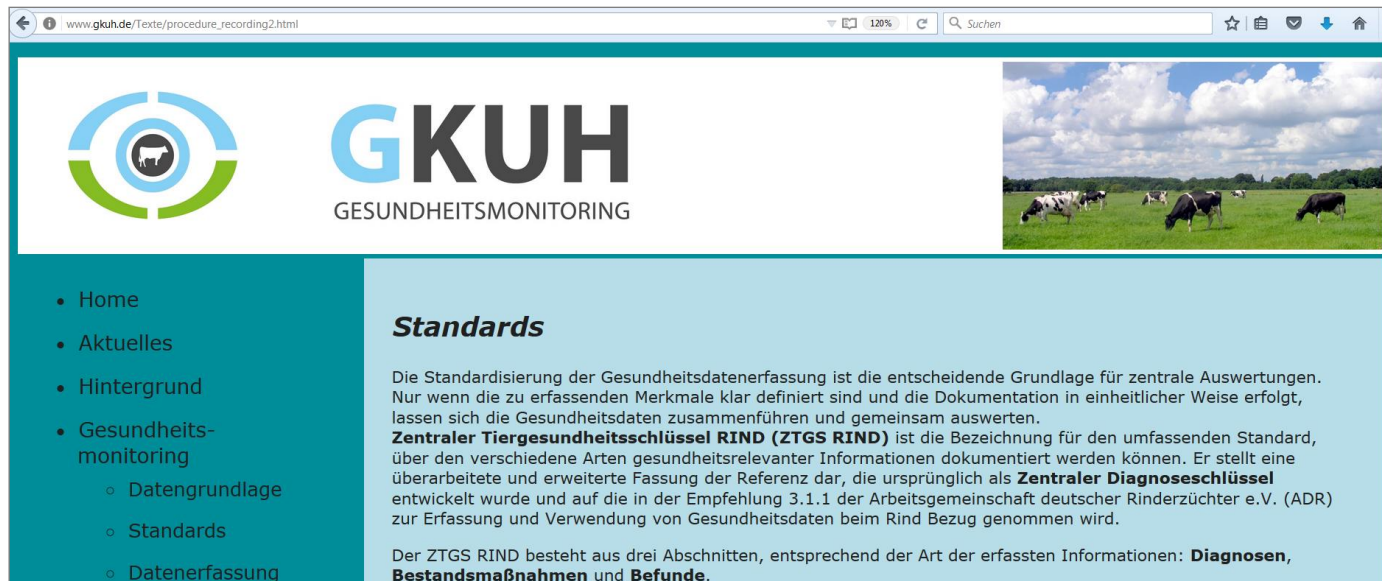
Working documents: status quo & plans

- ICAR central health key as internationally agreed recording standard
 - adopted by herd management systems
 - basis of simplified national keys, cross references, ...
- file formats facilitating the use of the reference standard
 - online version
 - separate pdf files, EXCEL version, ...
 - extended versions (approaches for plausibility checking etc.)
implying extension of standardization / harmonization to data processing
- regular revision to keep up with developments
(compatibility? coverage / comprehensiveness? feasibility of use?)
 - new specific keys
 - co-existing approved recording standards
 - increased knowledge



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Intermediate solution (I)



www.gkuh.de/Texte/procedure_recording2.html

GKUH
GESUNDHEITSMONITORING

Die Standardisierung der Gesundheitsdatenerfassung ist die entscheidende Grundlage für zentrale Auswertungen. Nur wenn die zu erfassenden Merkmale klar definiert sind und die Dokumentation in einheitlicher Weise erfolgt, lassen sich die Gesundheitsdaten zusammenführen und gemeinsam auswerten.

Zentraler Tiergesundheitsschlüssel RIND (ZTGS RIND) ist die Bezeichnung für den umfassenden Standard, über den verschiedene Arten gesundheitsrelevanter Informationen dokumentiert werden können. Er stellt eine überarbeitete und erweiterte Fassung der Referenz dar, die ursprünglich als **Zentraler Diagnoseschlüssel** entwickelt wurde und auf die in der Empfehlung 3.1.1 der Arbeitsgemeinschaft deutscher Rinderzüchter e.V. (ADR) zur Erfassung und Verwendung von Gesundheitsdaten beim Rind Bezug genommen wird.

Der ZTGS RIND besteht aus drei Abschnitten, entsprechend der Art der erfassten Informationen: **Diagnosen**, **Bestandsmaßnahmen** und **Befunde**.

- **Diagnosen**
 - ohne Zusatzangaben [DEUTSCH](#) [ENGLISCH](#)
 - mit Zusatzangaben [DEUTSCH](#) [ENGLISCH](#)
- **Bestandsmaßnahmen**
 - ohne Zusatzangaben [DEUTSCH](#) [ENGLISCH](#)
 - mit Zusatzangaben [DEUTSCH](#) [ENGLISCH](#)
- **Befunde**
 - ohne Zusatzangaben [DEUTSCH](#)
 - mit Zusatzangaben [DEUTSCH](#)

Um die Einarbeitung des Erfassungsstandards in Dokumentstationssysteme zu erleichtern, finden Sie hier zusätzlich zu den pdf-Versionen den **ZTGS Rind im Tabellenformat** (separate Tabellenblätter für Diagnosen, Bestandsmaßnahmen und Befunde):

[xlsx-Version DEUTSCH](#)

[xlsx-Version ENGLISCH](#)

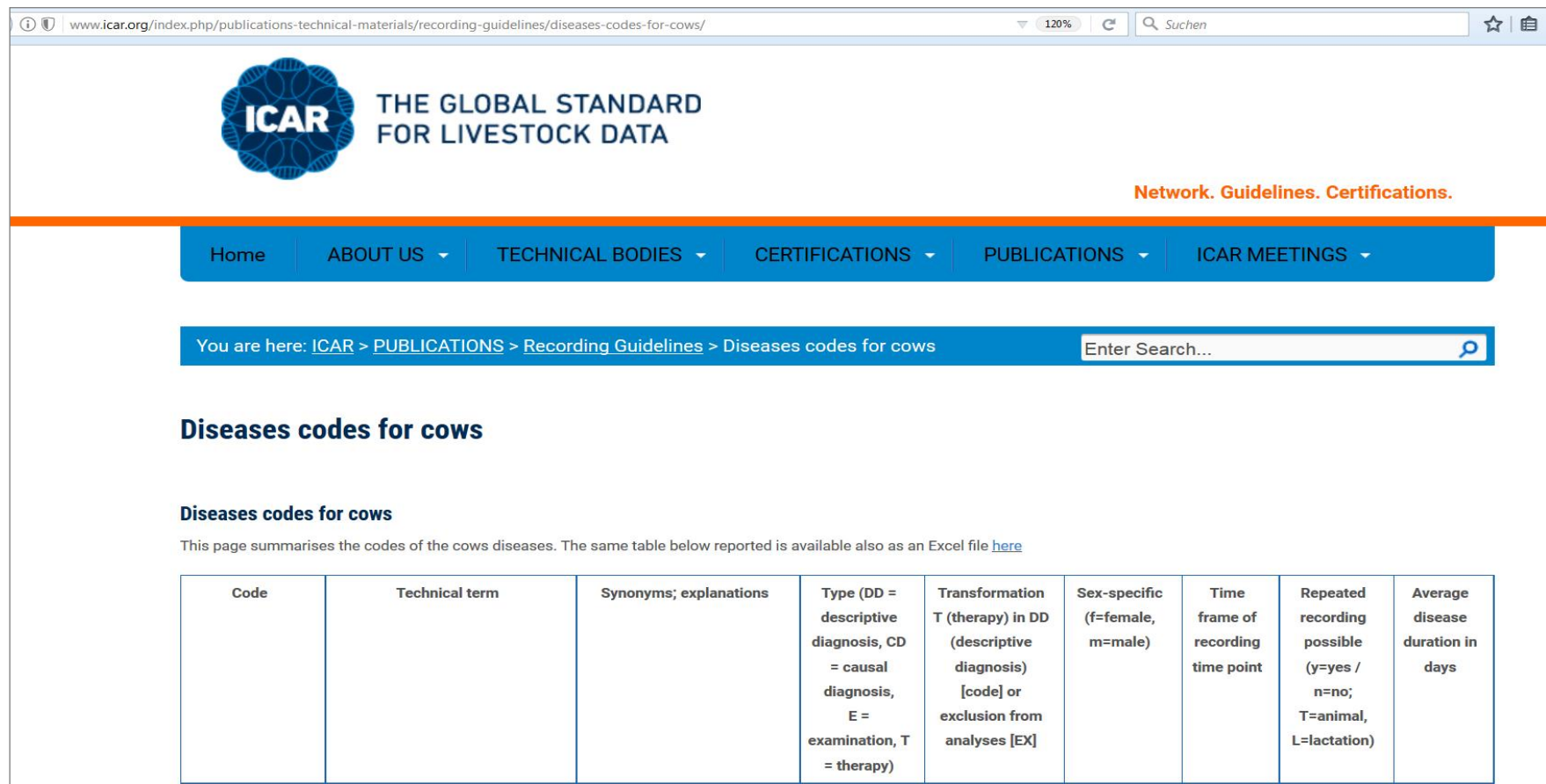
Ansprechpartner für fachliche Fragen rund um die standardisierte Gesundheitsdatenerfassung ist als Mitglied der deutschen und internationalen Arbeitsgruppen für Gesundheitsmerkmale bzw. funktionale Merkmale Kathrin F. Stock, vit / Verden (Email: friederike.katharina.stock@vit.de).

Auf Wunsch können Sie auf diesem Wege auch die Standards in einem alternativen Format (z.B. csv, txt) beziehen.



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Intermediate solution (II)



www.icar.org/index.php/publications-technical-materials/recording-guidelines/diseases-codes-for-cows/

120% Suchen

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Network. Guidelines. Certifications.

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You are here: [ICAR](#) > [PUBLICATIONS](#) > [Recording Guidelines](#) > Diseases codes for cows

Enter Search...

Diseases codes for cows

Diseases codes for cows

This page summarises the codes of the cows diseases. The same table below reported is available also as an Excel file [here](#)

Code	Technical term	Synonyms; explanations	Type (DD = descriptive diagnosis, CD = causal diagnosis, E = examination, T = therapy)	Transformation T (therapy) in DD (descriptive diagnosis) [code] or exclusion from analyses [EX]	Sex-specific (f=female, m=male)	Time frame of recording time point	Repeated recording possible (y=yes / n=no; T=animal, L=lactation)	Average disease duration in days
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Thank you!



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EuroTier – Claw health dialogue between science and practice (October 2016)

ICAR CLAW HEALTH ATLAS



The ICAR Claw Health Atlas can be downloaded from: http://www.icar.org/Documents/ICAR_Claw_Health_Atlas.pdf