

# Clinical Cases

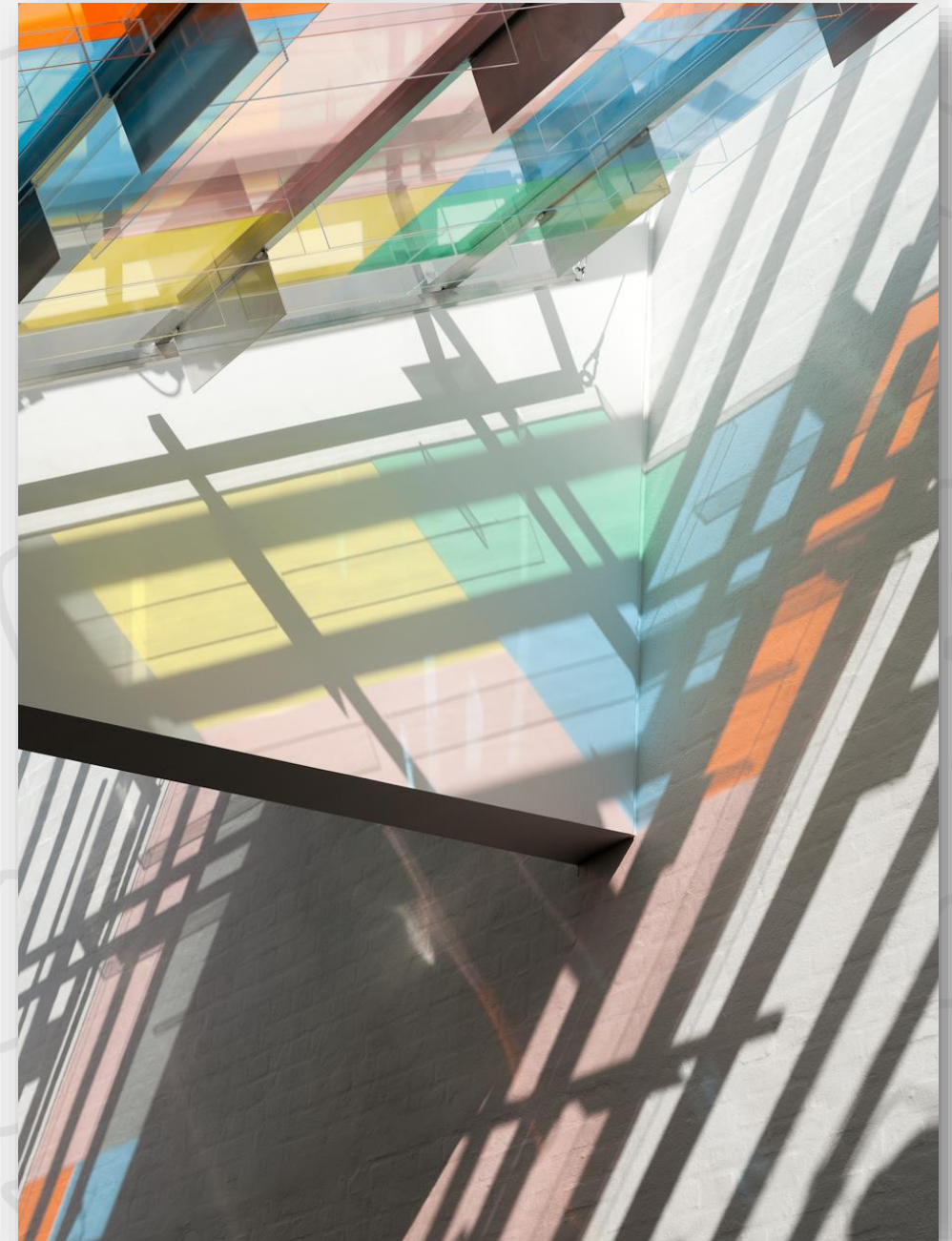
## General Clinical Practice, Companion animals

### How to improve clinical reasoning for veterinary students

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# What are theoretical clinical cases?



## Case-based and computer assisted learning

### Aim:

- Teach veterinary students ***clinical reasoning and decision-making skills***
- Provide veterinary students with ***Day-1 competences***





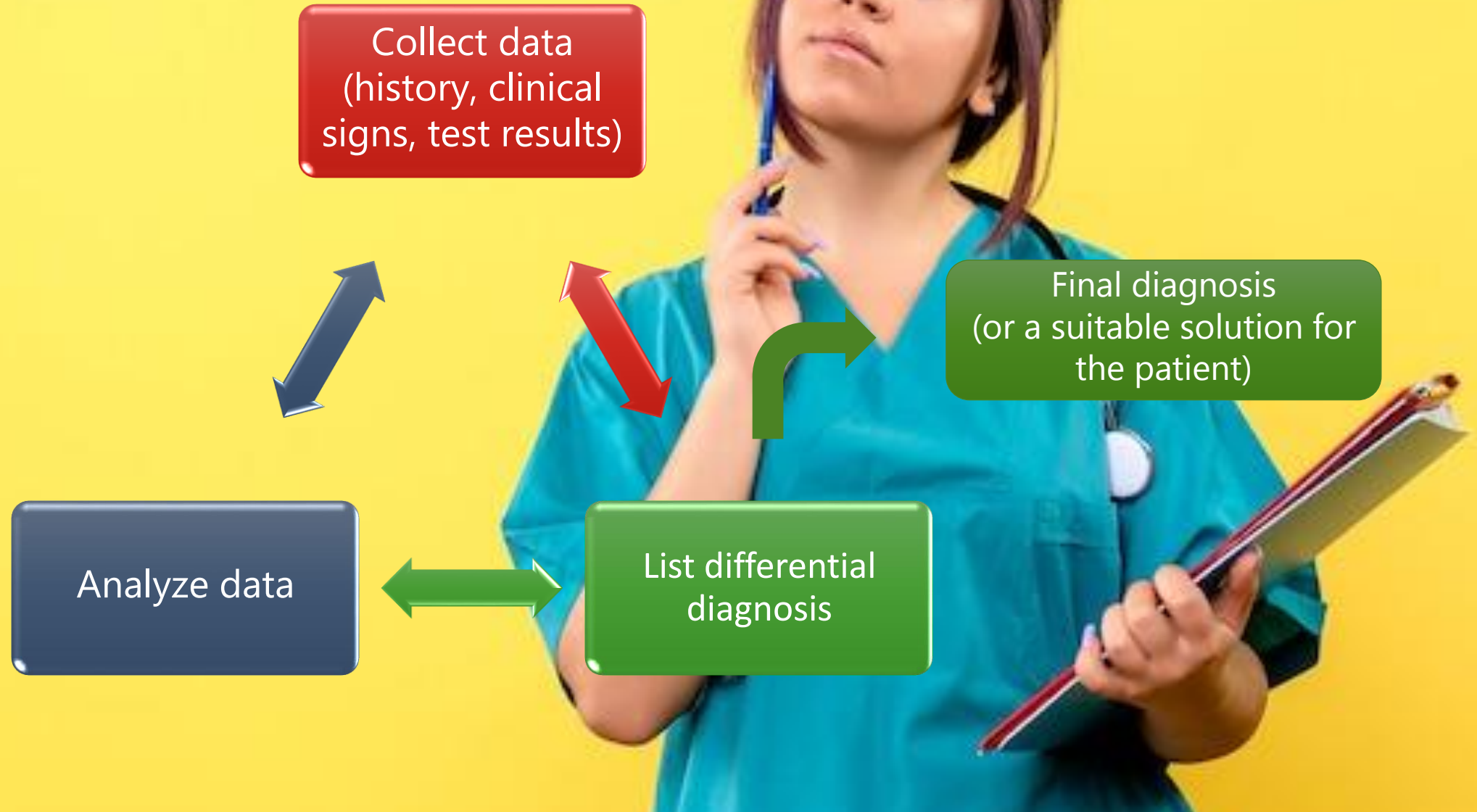
## Background for the theoretical case-module

Mandatory part of the course General Clinical Practice, Companion Animals

Provide students with Day-1 competences

Train clinical reasoning/decision making

# What is Clinical Reasoning/Decision Making?





# Former set-up of cases

## Linear thinking – answers were given in advance...

### Case: 'Basse'

Domestic short hair cat, 15 yrs, neutered male

#### History:

Basse er på det sidste blevet tiltagene nedstærmt og er begyndt at tabe sig trods god ædelyst. Han drikker og urinerer mere end tidligere, fx kan han tømme sin vandskål flere gange dagligt. Ejer observerer, at han af og til virker lidt usikker på benene og går lidt sammensunken i bagparten, men der er ikke observeret halthed. Fæces er normale af farve, konsistens og mængde og afsættes ubesværet 1-2 gange dagligt. Basse er en indekat, der regelret vaccineret med Purevac RCP. Ælder Hills tørkost til ældre katte.

#### Physical exam:

Alment uforstyrret. Huld 7/9. Vægt 6,8 kg. T: 38,9, P: 122, R: 26. Kapillærfyldning < 2 sek. Lys- og hudfold lægger sig på 3 sek. Når katten bliver sat på gulvet, går han undersøgende rundt på alle benene. Bagbenene overekstenderede, så han nærmest hviler på hele underbenet. Ved indtrækning af bagbenene nedsat fylde og tonus, men samtlige led er indolente og frie. Undersøgelse af lemmerne kan ikke gennemføres, da katten ikke tillader det. Øvrige kliniske parametre er upåfaldende.

#### Tests:

Hæmogram og biokemi, urinanalyse, BU og resistensbestemmelse af cyst. med fremlæggelsen skal fig. bl.a. besvares og indsættes på de relevante steder i præsentationen: Vil man udføre alle undersøgelser samme dag, vil man bede Basse om at komme igen til nye undersøgelser en anden dag eller vil man indlægge Basse og behandle den patologiske til prøvesvar foreligger? Begrund svaret. Hvad er hovedfundet på blod- og urinanalyserne. Beskriv de øvrige abnorme fund og deres betydning i forhold til hovedfundet. Hvordan kan det stemme overens, at urinens vægtfylde er normal, selvom den makroskopisk vurderes tynd af udseende? Hvorfor er der foretaget dyrkning og resistensbestemmelse på urinen? Kan den abnorme stilling, holdning og bevægelse være en del af Basses sygdomskompleks, eller har han to forskellige lidelser? Redegør for vigtige ligheder og forskelle på lidelsen hos hund og kat, og om Basse's livsstil har en betydning for lidelsens opståen.

#### Blood results

Parameter	Resultat	Reference	Unit
Total leukocytter	18,1		10 <sup>9</sup> /L
Neutrofiler	0		%
Lymfocytter	0		%
Monocytter	0		%
Eosinofiler	3,2		%
Basofiler	1		%
Hæmoglobin	0		g/dL
Hæmatokrit	1,85		%
Plasma	0		g/dL
Glucose	9,95		mmol/L
Carbamid	8,4		mmol/L
Creatinin	0,398		mg/dL
Leucocytal total	357		/mm <sup>3</sup>
Fibrinogen	1		g/L
Alaninaminotransferase (ALAT)	147		U/L
Basisk fosfatase (BASP)	182		U/L
Gammaglutamyltransferase (GGT)	0		U/L
Glucose	28,57		mmol/L
Carbamid	6,36		mmol/L
Creatinin	83		µmol/L
Amylase	530		U/L
Cholesterol	3,9		mmol/L
Bilirubin total	0,8		µmol/L
Albumin	39,8		g/L
Protein i serum	74,7		g/L
Fruktosamin	665		µmol/L
Galdehyre	5		µmol/L
Calcium	2,68		mmol/L
Magnesium	1,05		mmol/L
Phosphat (F-non-esterificeret)	1,48		mmol/L
Natrium	151,8		mmol/L
Kalium	4,42		mmol/L
Serum Amyloid A, kat	0,7		mg/L

#### Urinalysis:

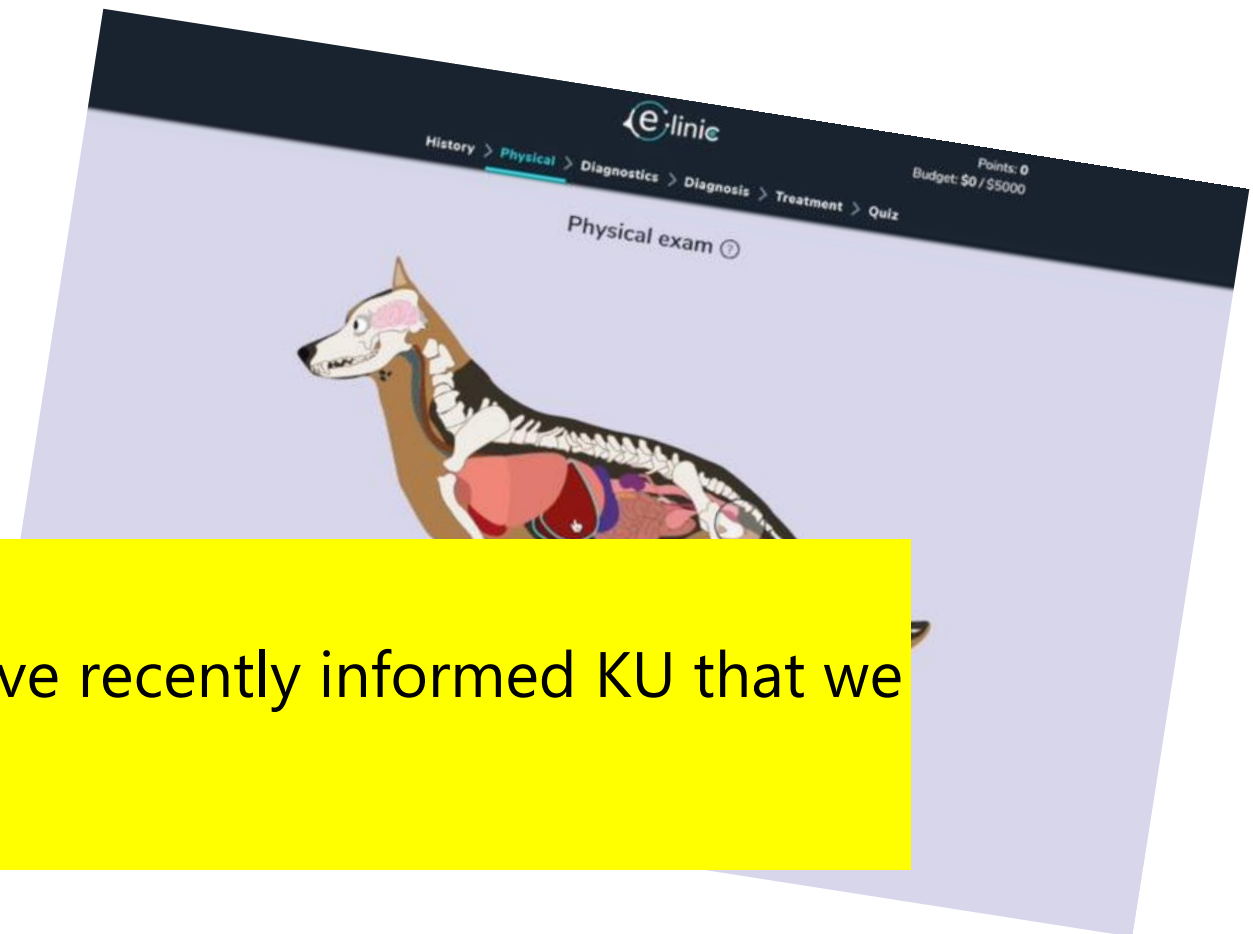
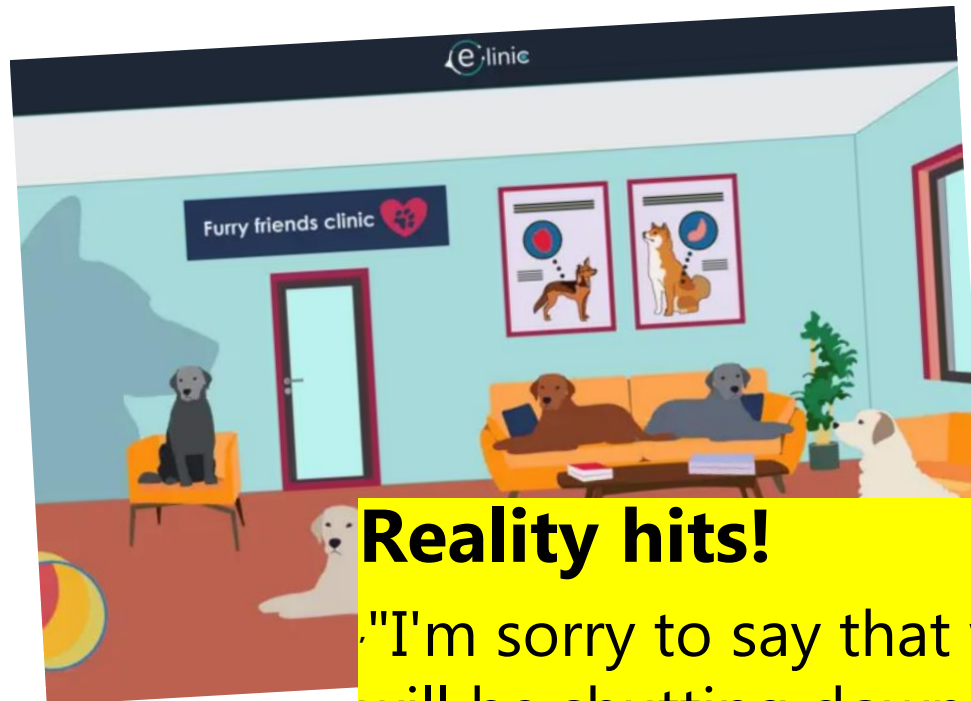
Urin vægtfylde refrakt.: 1,036  
 Urin Glucose: 4+  
 Urin Bilirubin: 0+  
 Urin Ketonstoffer: 0+  
 Urin Blod: 0  
 Urin pH: 6,5  
 Urin Protein: 0+  
 Urin Urobilinogen: 0+  
 Urin sediment:  
 Makroskopisk: Tynd urin, intet sediment  
 Mikroskopisk ufarvet: En del udefinerbart materiale, ellers intet at bemærke  
 Mikroskopisk farvet: En del farverester, ellers enkelte små epithelceller

**But does this enforce an independent thinking and reasoning similar to what the students practice during their clinical rotations?**

## Rationale for changing the case set-up format

- Wanted a case-simulator/interactive set-up
- Enforcing the students to reason and think in a way that mirrors the clinical setting (more 'real life' situations)
- Less focus on getting the exact diagnosis – but more emphasis on the work-up process for a better learning outcome for the students (training clinical reasoning skills)
- Survey to evaluate the students' feedback on a revised case set-up

# Veterinary eClinics



## Reality hits!

"I'm sorry to say that we have recently informed KU that we will be shutting down... "

# Now what to do???



- **No other electronic platforms seemed ideal**
- **Could we risk the same as with Veterinary eClinics...**



# How about Excel as a case simulator tool?

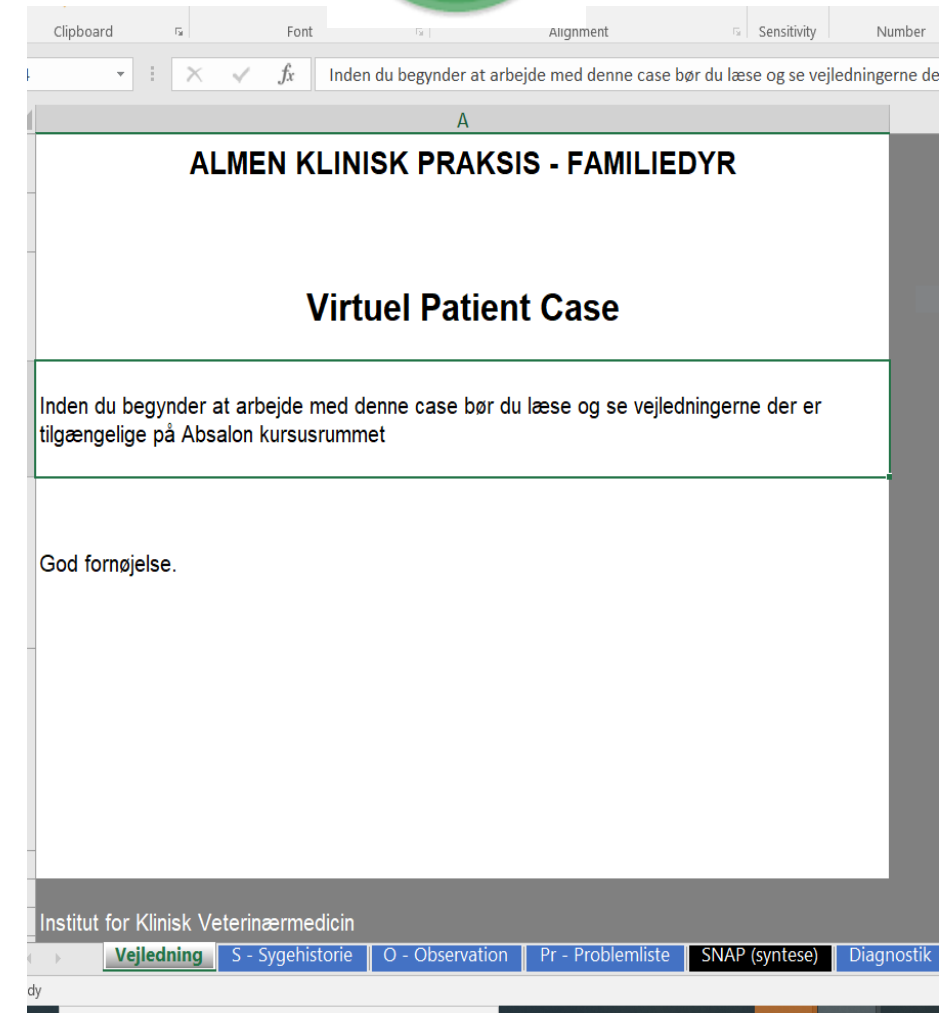


- **Advantages:**

- Cases could be made in a way where they reflect the way we work in the clinic
- Userfriendly – intuitive upload of cases
- No need for specialized support

- **Disadvantages:**

- Visually un-inspiring
- Interactive set-up has limitations
- Examination/case presentation required



# Student feed-back

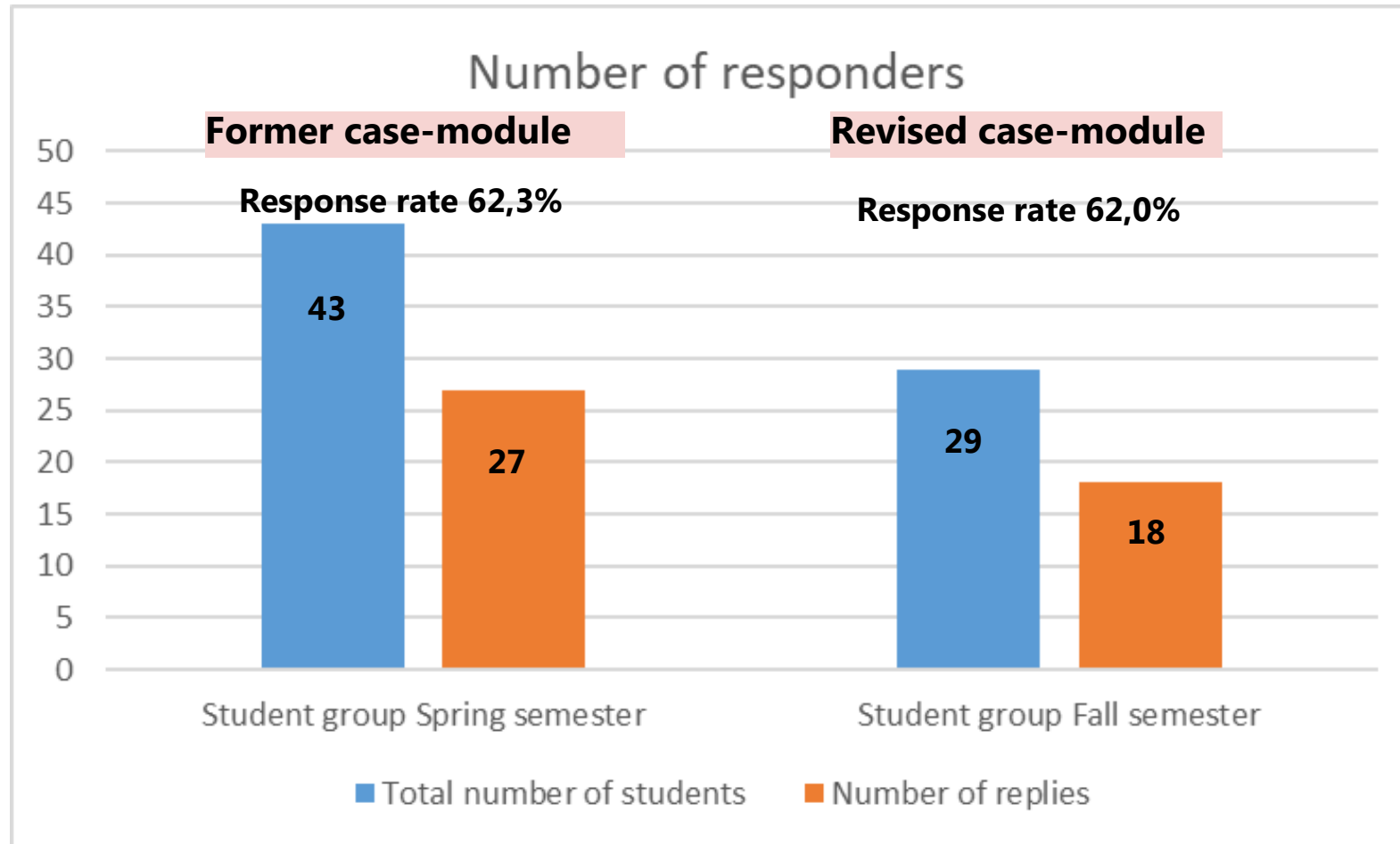


**Online Questionnaire**



**Interviews**

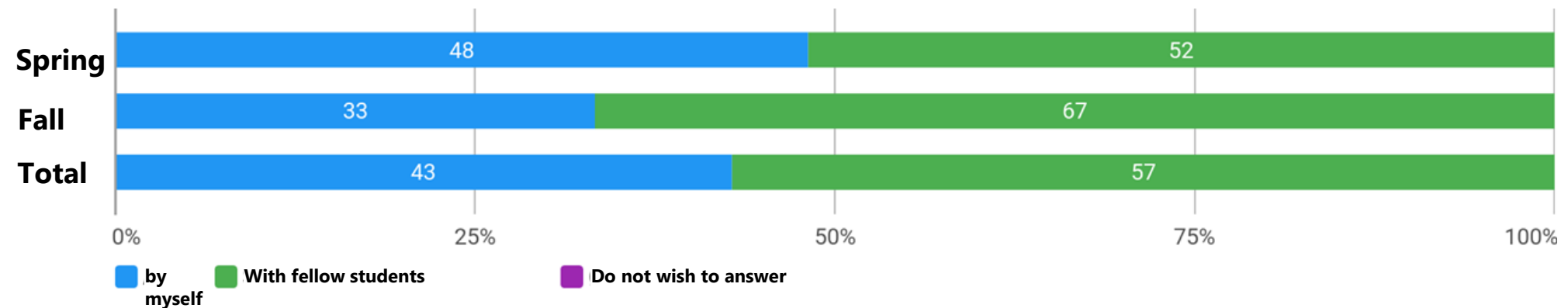
# Online questionnaire - SurveyXact



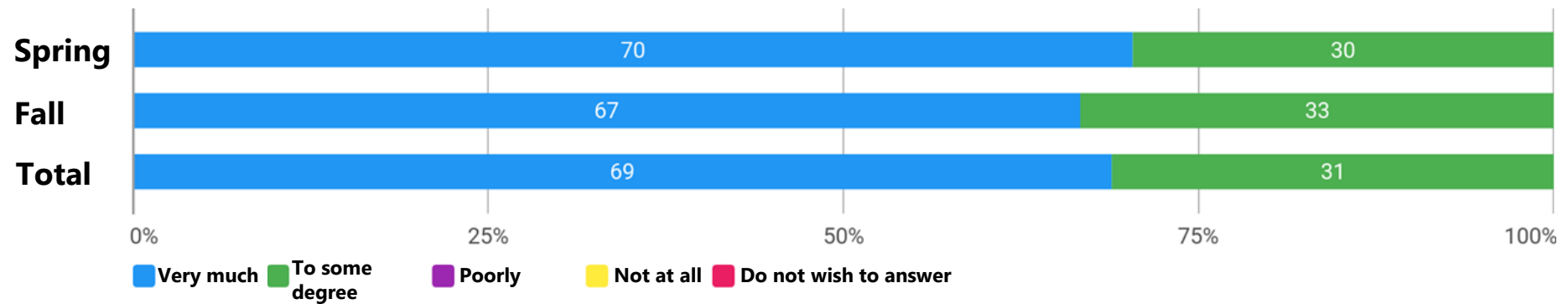
Total number of responders for both semesters: 45



# Have you worked on the cases by yourself or in groups with fellow students?



# Are the cases reflecting real clinical cases?



## Student questionnaire feed-back - Former case-setup

*'For the medical cases, one wasn't compelled or forced to assess the choice of diagnostic tests, because the test results were all given beforehand. It would be better to push us into thinking which diagnostic tests we should choose that are relevant for the actual case'*

-Student A - (Spring semester)

*'If a quizzing format could be implemented for each case, where one would work chronologically through the case in a problem-oriented manner, this would give a much greater benefit from the case work. Since all clinical findings and test results were given as the case is introduced, I didn't reflect on how I would have approached such case in a real clinical situation and my differential diagnostic assessment was limited'*

-Student B- (Spring semester)

*'Interactive cases would be really cool'*

-Student C - (Spring semester)



## Student questionnaire feed-back – new case-setup

*'I like the idea of clinical reflection in the new case work and the ability to immerse one-self in the case work-up'*

-Student A - (Fall semester)

*'The new case module is a really great way to get introduced to conditions and topics that one may not see during the weeks of clinical rotation in General Receiving and General Surgery'*

-Student B - (Fall semester)

*'Originally, I had initially not concluded the correct diagnosis for the case, however, I was able to assess through the diagnostic tests and have the dialog with the teacher at the day of case presentations as to why I had concluded otherwise'*

-Student C - (Fall semester)

# Student feedback - Interview

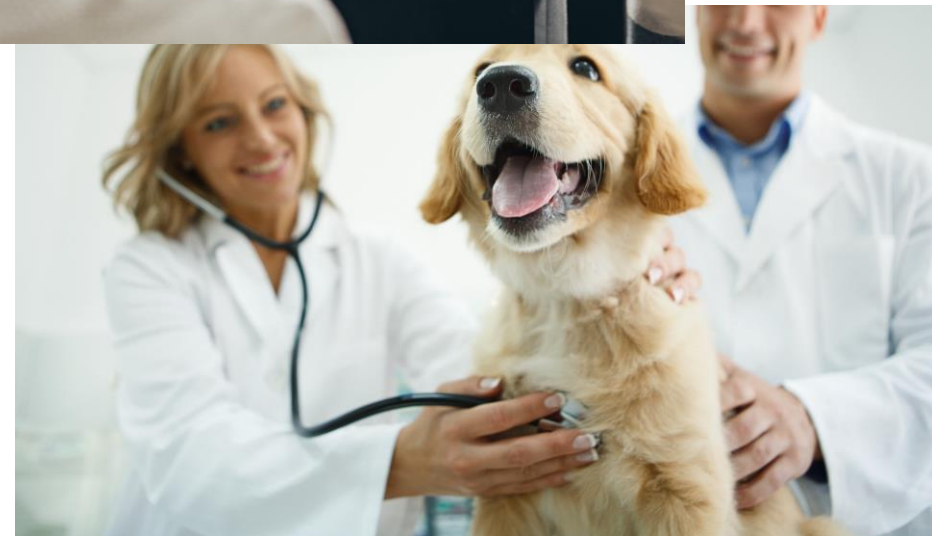


# Teacher feed-back

**The students are much more confident in their clinical decision making and ownership of how to approach the case**

**Students are engaged and interactive in discussions within the group on day of presentation**

- **Former set-up: student designated as opponent**
- **Revised set-up: natural flow in opponent role within the entire student group**





# Conclusions


- **Format set-up is easy (low key) and more fun to work with for teachers and students**
- **Adding a synthesis tool and enabling own decision-making (clicking of test results) are guiding students to a refined, independent approach to the theoretical case**
- **Learning-outcome**
  - **Improved clinical reasoning and decision-making for the students**
- **Although it can't replace the clinical training, it is a great **low-fidelity simulation of real cases!****



# Learning points and perspectives

- **Layout can be improved – incl. more space to write in each 'cell'**
- **Adding mandatory discussion forum for the students**
- **Video presentations of live patients as an extended physical exam**
- **Adding more 'real-life' factors, incl. finances (money spent for each exam) to help train clinical complexity even further**





## **Acknowledgement**

UCPH (KU) for supportive funding for Teaching Development with Digital Elements



**Thank you for your attention!**

