

ANTIMICROBIAL RESISTANCE (AMR)

What are Antimicrobials used for?

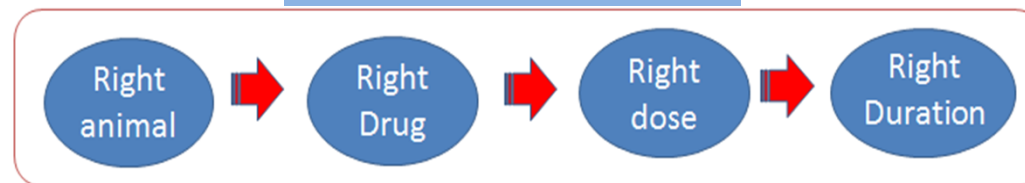
- Medicines that target pathogenic organisms that cause disease (i.e. antimicrobial)
- May kill or stop the growth/spread of a pathogen

IRELAND'S NATIONAL ACTION PLAN (iNAP) ON ANTIMICROBIAL RESISTANCE 2017-2020

What is AMR?

- Microbes develop **resistance to antimicrobials** and thus become ineffective
- Potentially causing future risk to current everyday medical procedures
- Risk to human and animal health

Prudent use



Focus more on preventative strategies

- Enhanced biosecurity
- Implement vaccination programs
- Improved husbandry management

How can we prevent AMR?

- Important to record antimicrobial use
- Avoid using against viruses
- Use for treatment not prevention
- Always use as prescribed

ESVAC (European Surveillance of Veterinary Antimicrobial Consumption)

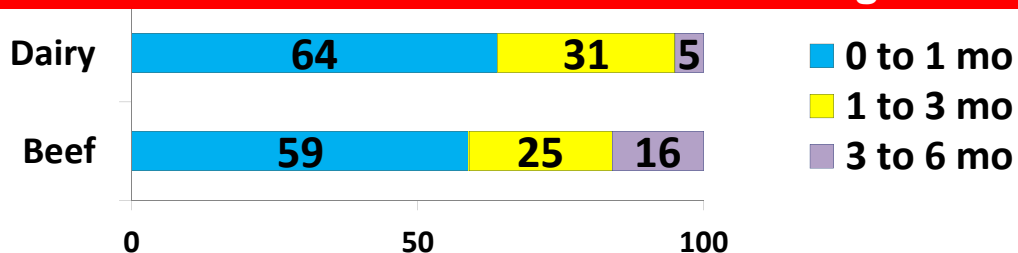
ANTIMICROBIAL USAGE ON FARMS

Calf health treatments analysed from birth to 6 mo. of age on 79 suckler beef and 44 dairy farms

Calves	Number of calves	Antimicrobial treatments	mg/PCU
Suckler beef	3204	841	7.25
Dairy	5358	929	7.11

mg/PCU (mg of antimicrobials population correction unit)

Antimicrobial usage (%) in beef and dairy calves treated for disease from birth to-6-mo of age



Antimicrobial class	Antimicrobial usage on beef farms		Antimicrobial usage on dairy farms	
	Number	%	Number	%
1 st & 2 nd GC ¹	0	0.0	1	0.1
Lincosamines	2	0.2	0	0.0
Spectinomycin	3	0.4	1	0.1
3 rd & 4 th GC ²	4	0.5	3	0.3
Macrolides	38	4.5	20	2.2
Aminoglycosides	63	7.5	79	8.5
Sulfonamides	94	11.2	161	17.3
Tetracyclines	97	11.5	160	17.2
Amphenicols	128	15.2	159	17.1
Fluoroquinolones	202	24.0	181	19.5
Penicillins	210	25.0	164	17.7

¹1st & 2nd AND ² 3rd & 4th generation cephalosporins

Breeding suckler cows by AI

Advantages of AI

- Access to high genetic merit proven maternal and terminal bulls
- Match cows/heifers with specific bulls
 - Easy calving bulls for young cows/heifers
 - Maternal bulls to produce replacements
- Minimises risk of an infertile bull
- Removes hazard of bull
- No specialised housing

Disadvantages of AI

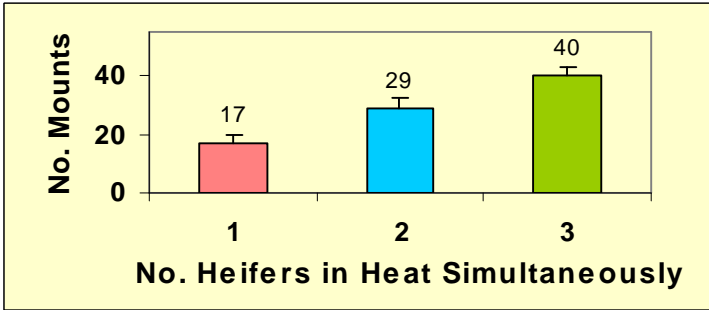
- Heat detection - labour
- Cow assembly for AI
- Costs
 - €30-35/cow
 - € 5-15/straw
 - Repeats ?
- Variable results

Heat Detection
Cow Assembly

} Key to successful use of AI

Conception rates usually excellent (60-70%) in suckler cows and heifers

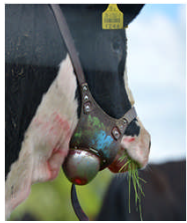
Breeding suckler cows by AI



Heat detection difficult in small herds and as more cows become pregnant

Heat Detection

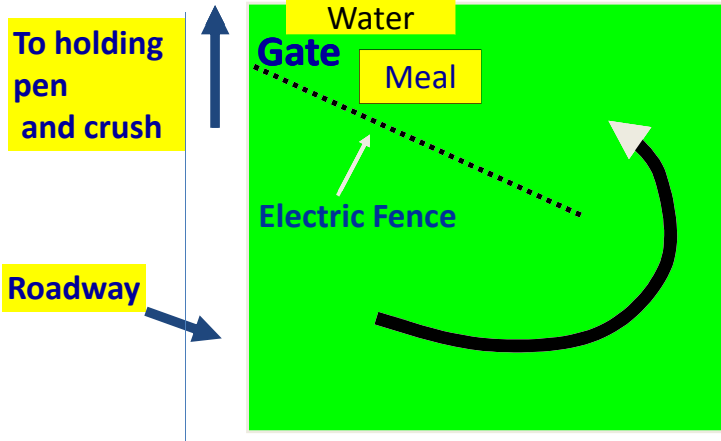
- Commitment & Understanding of signs of heat
- Use Aids



Teaser Bull



Cow Assembly



- Heat check cows:
 - Early morning & late evening
- AI timing 0-24 hours after heat onset
- Once /day adequate
- AI technique critical for DIY operators



Schmallenberg Virus

- A midge-borne virus that can cause mild fever & milk drop in cattle, but also capable of causing severe foetal deformity and abortion if cattle or sheep are infected for the first time during early pregnancy
- Now accepted as an endemic disease in Ireland, with proven exposure in all 32 counties on the island.
- Irish cattle (& sheep) have probably acquired reasonably good 'herd immunity' now through natural exposure - however the disease introduces new uncertainty to farming as gaps in this immunity may appear in the future
- Schmallenberg virus is likely to continue to cause low impact overall, but is capable of causing severe losses on individual holdings, especially where animals are in early pregnancy and calving (or lambing) is synchronised
- A Schmallenberg vaccine has been developed but not currently available in Ireland (commercial reasons related to low uptake & demand)



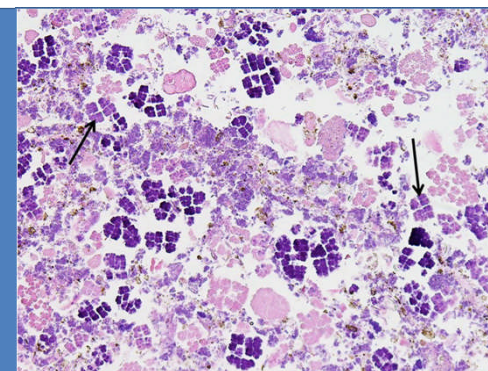


Department of Agriculture, Food & the Marine Regional Veterinary Laboratories - New & Emerging Diseases

- The Department of Agriculture, Food & the Marine runs a network of Regional Veterinary Laboratories at Athlone, Cork, Kilkenny, Limerick & Sligo
- These laboratories offer post mortem and field investigation service to Irish livestock farmers through their veterinary surgeons
- The data generated by this service is the basis of Ireland's scanning surveillance capacity to detect new & emerging diseases
- This is also how the Department monitors endemic disease patterns in Irish livestock
- These boards show some current & recent examples of new & emerging diseases confirmed by this service

Fatal bloat associated with Sarcina-like bacteria in artificially-reared dairy calves

- A new disease to Ireland detected on several occasions in the past two years & being actively researched by DAFM Veterinary Laboratory Service staff
- This causes inflammatory changes & bloat in the stomach of young calves, and has been associated with fatalities
- Early indications show an association with the use of automatic milk replacer feeders & sub-optimal hygiene/sanitation of feeder hardware.
- The arrows show the characteristic cuboidal bacteria in microscopic cross-sections





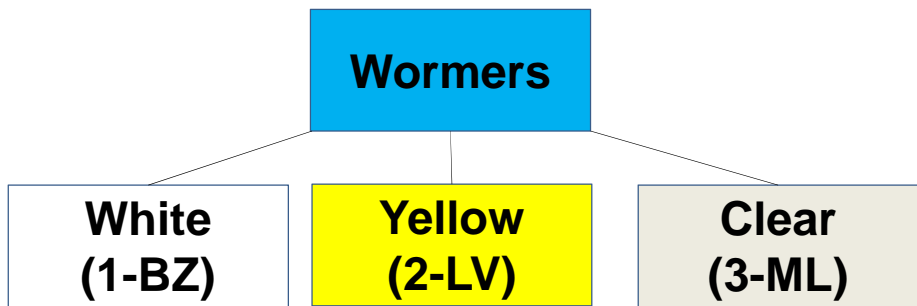
Poisonings associated with the use of recycled containers for livestock feed or drinking water

- Recycled containers may not be fully traceable - buyer beware!
- Remember that the label 'food grade' on industrial containers relates to the quality of the materials used in its construction – not the contents!
- Even when containers do originate in the food industry, remember some food ingredients are hazardous in concentrated form. RVLs have investigated and confirmed fatal poisonings from residues of certain concentrated food ingredients in recycled containers.
- Use purpose-made animal feed containers, troughs & drinkers & do not use recycled industrial containers, tanks and bags for any livestock-related purpose on your farm.
- **REMEMBER: when you bring something onto your farm you are bringing it into the food chain!**



I.B.C. bulk containers for sale online in Ireland with HazMat (hazardous material) warningstickers still in place. If these are not present, have they been removed? Do you really know what you are buying?

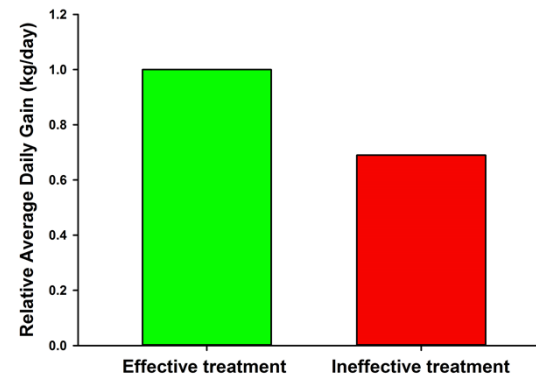
Wormer resistance on dairy calf-to-beef farms



16 dairy calf-to-beef farms tested for gut worms
Results: resistance to 3-ML (ivermectin)
 1-BZ (fenbendazole)

Wormer	Species	Resistance on farms
3-ML	<i>Cooperia</i>	100%
	<i>Ostertagia</i>	82%
1-BZ	<i>Cooperia</i>	36%
	<i>Ostertagia</i>	91%

Failure to effectively treat for gut worms had a negative impact on performance of first grazing season calves



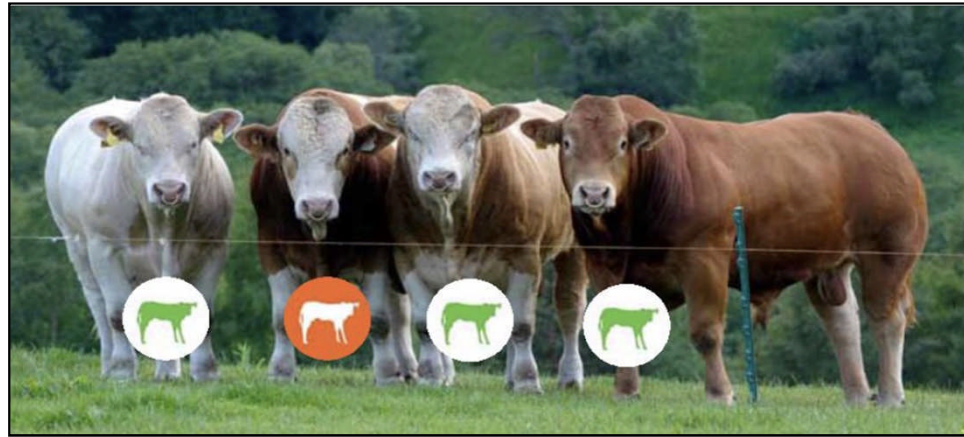
Key Management tips

- Develop a sustainable worm control plan
- Treat animals only when necessary based on
 - faecal egg count
 - reliable animal performance indicators
- Know what wormers are effective on your farm

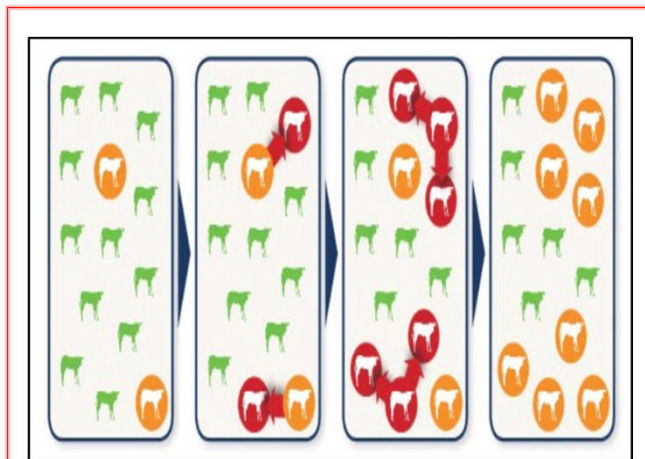
IBR and Bovine Respiratory Disease: whole herd approach



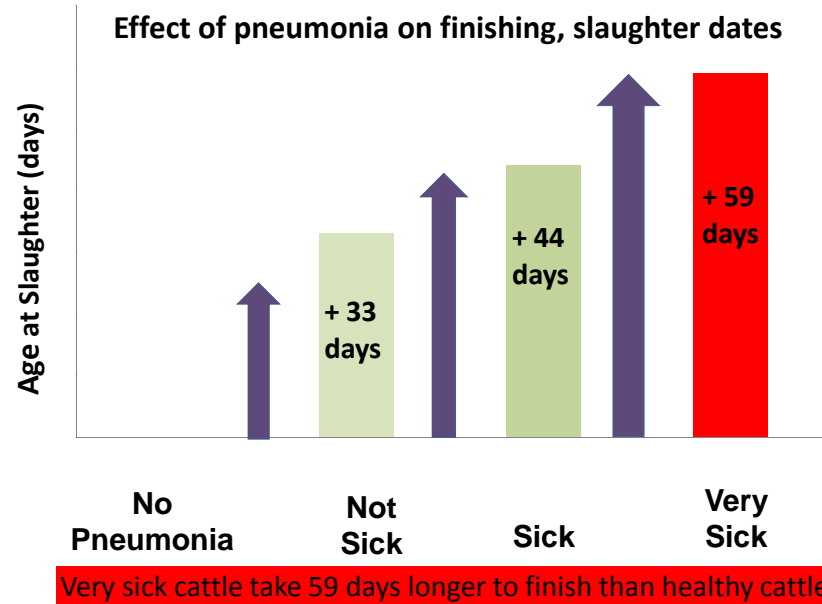
IBR



Latent IBR Carrier



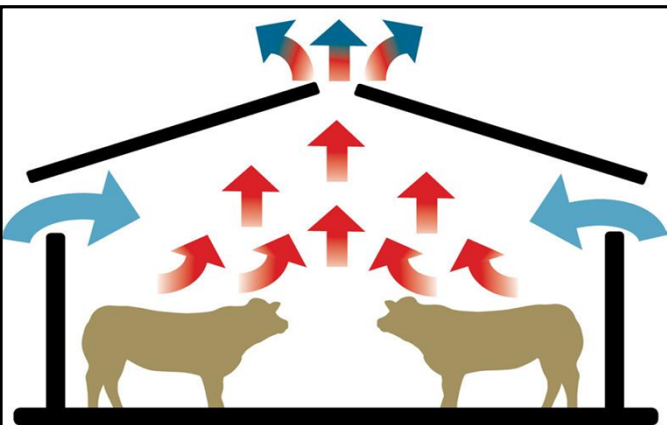
Spread of IBR following reactivation and shedding of virus from carrier animals.



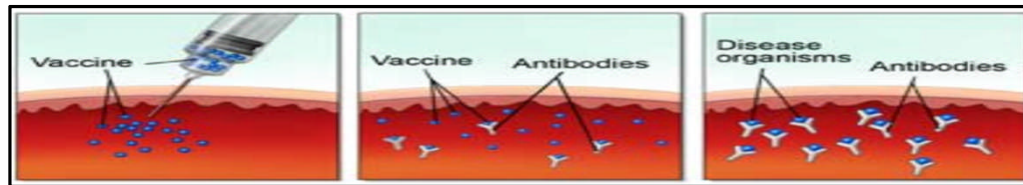
IBR and Bovine Respiratory Disease; prevention is key



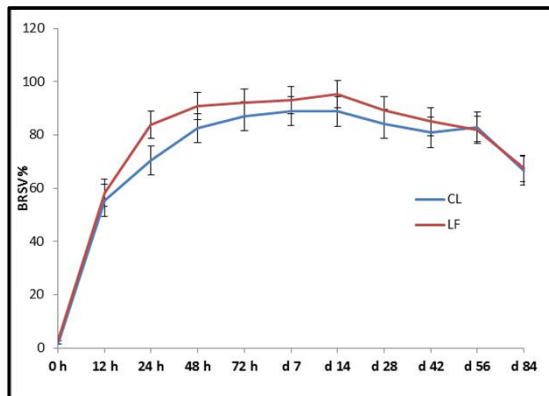
IBR Trachea



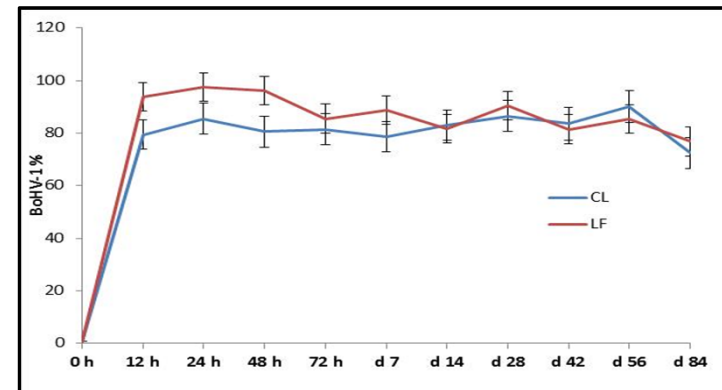
The Stack Effect



Vaccine Immunity



RSV maternal antibodies in suckler beef calves



IBR maternal antibodies in suckler beef calves from cows vaccinated for IBR

Increasing the usage of AI

Spring calving suckler herds – Teagasc

- 100% AI - 10 week breeding season
- Once daily AI (12pm) – easy access to handling area for drafting
- Scan 30 days after commencement of breeding and 30 days after conclusion of breeding
- ~ 90% pregnancy rate to AI

Use of high EURO star index bulls

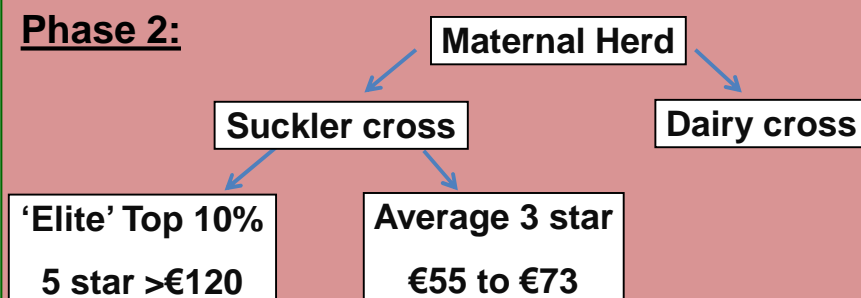
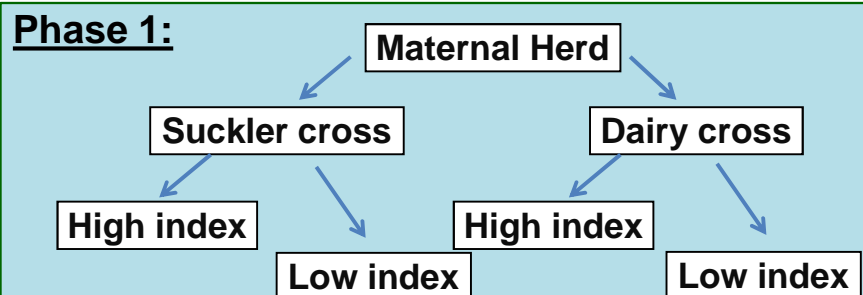
- Team of bulls (3-4 bulls) selected before the start of the breeding season
- 5 stars for terminal traits (e.g. ZGM, LM4093, FSZ; High Reliability >80%)
- Low calving difficulty (< 7% for mature cows and <6% for 1st and 2nd calvers)

Heat detection

- ✓ Cows checked 5 times daily – all signs of heat recorded
- ✓ Vasectomised bulls – 12-15 month old (chin ball attached). One bull per 50 cows
- ✓ Tail Paint – all cows painted 3 weeks before breeding. Change colour after breeding.



Maternal Herd



2014-2017 PERFORMANCE

	Beef x Dairy		Beef	
	High	Low	High	Low
Replacement Index (€)	134	78	101	36
Live weight (kg)	562	569	634	622
Pregnancy rate (%)	84	88	86	77
Calving Interval (d)	363	361	362	359
Calf birth weight (kg)	42	44	44	45
Calf weaning weight (kg)	287	290	281	271
Calf ADG (kg/d)	1.12	1.13	1.10	1.06
Milk yield (kg/d)	8.9	8.4	7.3	6.6
Progeny carcass weight (kg)	322	327	330	324

- Born autumn 2016/ spring 2017
- Genomically tested (min. rel. 20%)
- Angus, Limousin and Simmental AI sires
- Breeding season:
 - 100% AI in 13 weeks
 - 4.1% calving ease CH sire (93% rel.)
 - 100% served @ 6 weeks

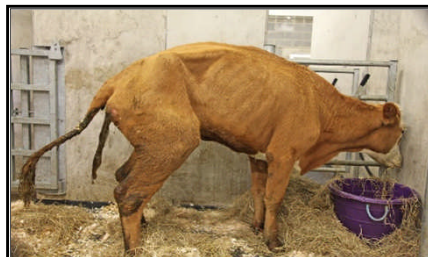


About Johne's Disease

- Johne's disease is an incurable bacterial disease that causes production losses in beef herds.

Signs

- Feed-conversion efficiency is reduced
- Weight loss
- Scour
- Emaciation and death



Key point

Calves can become infected early in life by drinking milk or eating food contaminated with the bacterium called MAP, which is shed in the dung or milk of infected adult cattle.

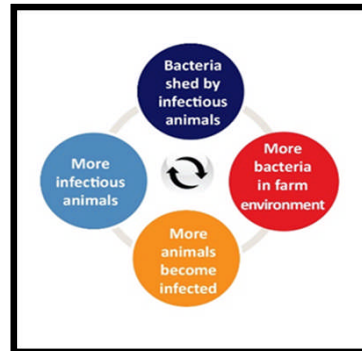
The stages of Johne's disease infection

- Infection establishes in a herd when an infected animal is introduced.
- That animal starts to shed bacteria in its dung around 2 years of age but may continue to look healthy.
- As the disease progresses, clinical signs become apparent and other animals have been exposed and infected.



Johne's disease prevention starts with effective herd biosecurity

Limit animal introductions or only introduce animals from herds that are test-negative.



BREAK THE CYCLE OF SPREAD

- Test all adult animals regularly and remove any infected animals
- Calve heifers and young cows in their age groups and separately from older cows
- Remove calves and their dams from the calving area as quickly as possible to reduce exposure of the calf to a high-risk environment.

Remember

- Calves are most susceptible to infection, which usually occurs within the first few weeks of life.
- Keep the calf environment clean.
- Keep test-positive cows away from calves.
- Remove infected animals from the herd.

