

Selective Dry Cow Therapy: Possibilities for North America?

2018 NMC

Daryl Nydam, DVM, PhD
Quality Milk Production Services

Cornell University



~ 60% of AMU in dairy production is for control or treatment of mastitis

- ~2/3 of that 60% is for dry cow therapy
- ~6 FDA approved DCT formulations
 - No meaningful differences in bioeconomic health and production outcomes



J. Dairy Sci. 99:593–607

<http://dx.doi.org/10.3168/jds.2015-10190>

© 2016, THE AUTHORS. Published by FASS and Elsevier Inc. on behalf of the American Dairy Science Association®. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

Randomized noninferiority study evaluating the efficacy of 2 commercial dry cow mastitis formulations

A. P. Johnson,* S. M. Godden,†¹ E. Royster,‡ S. Zuidhof,‡ B. Miller,‡ and J. Sorg†

*The Udder Doctor, Seymour, WI 54165

†Department of Veterinary Population Medicine, University of Minnesota, Saint Paul 55108

‡Boehringer Ingelheim Vetmedica Inc., St. Joseph, MO 64506



J. Dairy Sci. 96:6390–6399

<http://dx.doi.org/10.3168/jds.2013-6705>

© American Dairy Science Association®, 2013.

Randomized noninferiority clinical trial evaluating 3 commercial dry cow mastitis preparations: II. Cow health and performance in early lactation

A. G. Arruda,* S. Godden,*¹ P. Rapnicki,* P. Gorden,† L. Timms,† S. S. Aly,‡§ T. W. Lehenbauer,‡§ and J. Champagne‡§

*Department of Veterinary Population Medicine, University of Minnesota, Saint Paul 55108

†Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames 50011

‡Veterinary Medicine Teaching and Research Center, Tulare 93274

§Department of Population Health and Reproduction, University of California, Davis 95616

2/3 of that 60% is for Dry Cow Therapy

FDA-Approved Drugs for Intramammary Use

Non-Lactating Cattle**

Active Ingredient	Drug Type	Milk Withholding Time	Meat Withholding Time	Product Name	Manufacturer/Marketer
Ceftiofur hydrochloride	Rx	None*	16 days	SPECTRAMASTTM DC	Zoetis, Inc.
Cephapirin (benzathine)	OTC	72 hours	42 days	Tomorrow Infusion	Boehringer Ingelheim Vetmedica, Inc.
Cloxacillin (benzathine)	Rx	None	30 days	Dry-Clox®	Boehringer Ingelheim Vetmedica, Inc.
	Rx	None*	28 days	Orbenin-DC®	Merck Animal Health
Penicillin G (procaine)	OTC	72 hours post-calving	14 days	Hanford's/US Vet go-dry™	G.C. Hanford Mfg. Co.
Penicillin G (procaine) / dihydrostreptomycin	Rx	96 hours post-calving	60 days	Quartermaster® Dry Cow	Treatment West Agro Inc.
Penicillin G (procaine) / Novobiocin	OTC	72 hours post-calving	30 days	AlbaDry® Plus Suspension	Zoetis, Inc.



Shouldn't be a complicated discussion...

Non-inferiority studies

- No meaningful differences in bioeconomic health and production outcomes:
 - Quartermaster v. Spectramast DC v. Tomorrow

Arruda, A.G., S. Godden, P. Rapnicki, P. Gorden, L. Timms, S.S. Aly, T.W. Lehenbauer, and J. Champagne. 2013a. Randomized noninferiority clinical trial evaluating 3 commercial dry cow mastitis preparations: I. Quarter-level outcomes. *J. Dairy Sci.* 96:4419-4435.

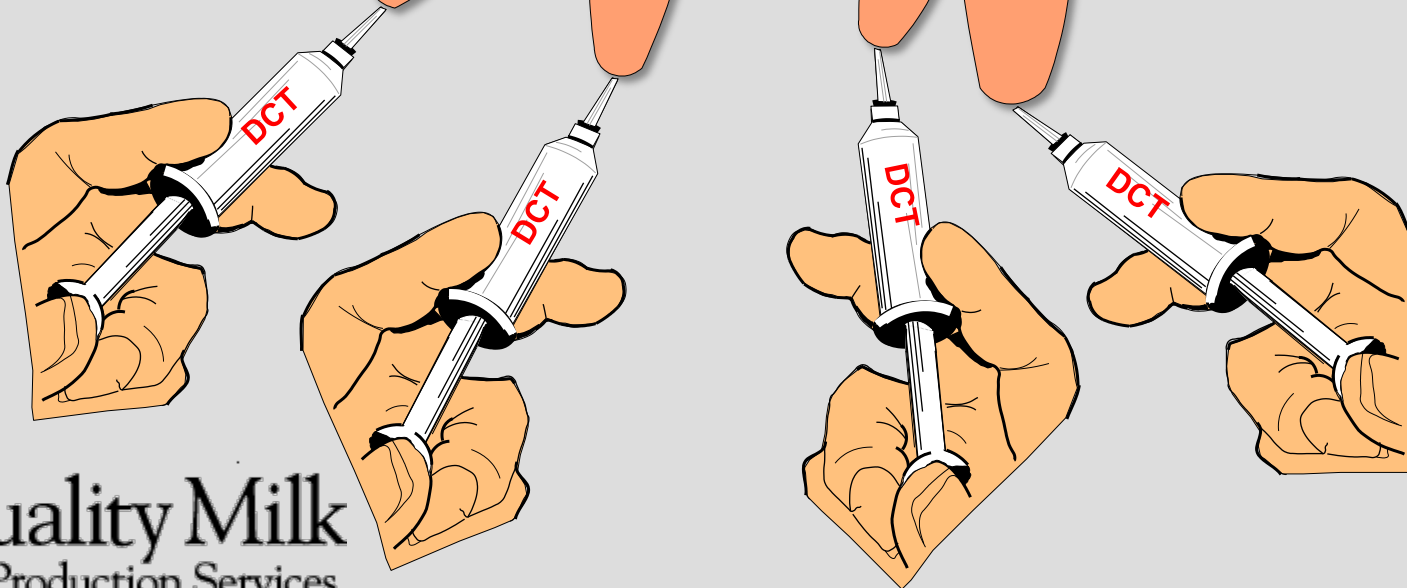
Arruda, A.G., S. Godden, P. Rapnicki, P. Gorden, L. Timms, S.S. Aly, T.W. Lehenbauer, and J. Champagne. 2013b. Randomized noninferiority clinical trial evaluating 3 commercial dry cow mastitis preparations: II. Cow health and performance in early lactation. *J. Dairy Sci.* 96: 6390-9.
 - Dry-Clox v. Spectramast DC

Johnson AP, Godden SM, Royster E, Zuidhof S, Miller B, Sorg J. 2016. Randomized noninferiority study evaluating the efficacy of 2 commercial dry cow mastitis formulations. *J Dairy Sci.* Jan;99(1):593-607

1960s “Blanket DCT”

Treat all 4 quarters
of all cows

Treat & Control
Mastitis



Quality Milk
Production Services

Blanket Dry Cow Therapy (BDCT)




5 Point Plan

1. Treat and record clinical mastitis cases
2. Post milking teat disinfection
- 3. Dry cow therapy**
4. Cull chronic cases
5. Milking machine maintenance



**National Mastitis Council
Recommended Mastitis Control Program**



How you and your vet can help fight Mastitis

- ### 1. MILK MACHINE TEST

You use your milking machine 730 times a year. How often do you have it serviced?
To operate efficiently the milking machine must be tested and faults put right at least once a year.
The MMB can do this. The cost, £4.75. For details, contact the nearest MMB regional office.
- ### 2. TEAT DIPPING

Dip teats immediately after milking using one of the recommended disinfectant solutions. This helps prevent new infections.
Remember this is only one part of the general hygiene at milking time.
- ### 3. DRY COW THERAPY

Treat every cow with a tube of long acting antibiotic in each quarter immediately after the last milking before the dry period.
Consult your vet for the best antibiotic to use.
If the dry period is shorter than six weeks make sure you discard the milk for at least the legal minimum of four days after calving.
- ### 4. TREATMENT OF CLINICAL CASES

Consult your vet about the best antibiotic to use on your farm.
Treat immediately any clots or other symptoms of mastitis you see and give the full course of treatment your vet recommends.
- ### 5. CULL CHRONIC CASES

Any cow which has several attacks of clinical mastitis in a lactation is a constant source of danger to the rest of the herd.
Keep a record of treatment and cull the cows which don't respond or which have repeated cases in one lactation.

Printed by Papers and Publications (Printers) Ltd., (T.U.), Swan Close, Banbury, Oxfordshire, Britain

Figure 5. The first publication of the Five-point plan, from the summer 1970 MMB Better Management, page 8.

Antimicrobial Dry cow therapy (aDCT)

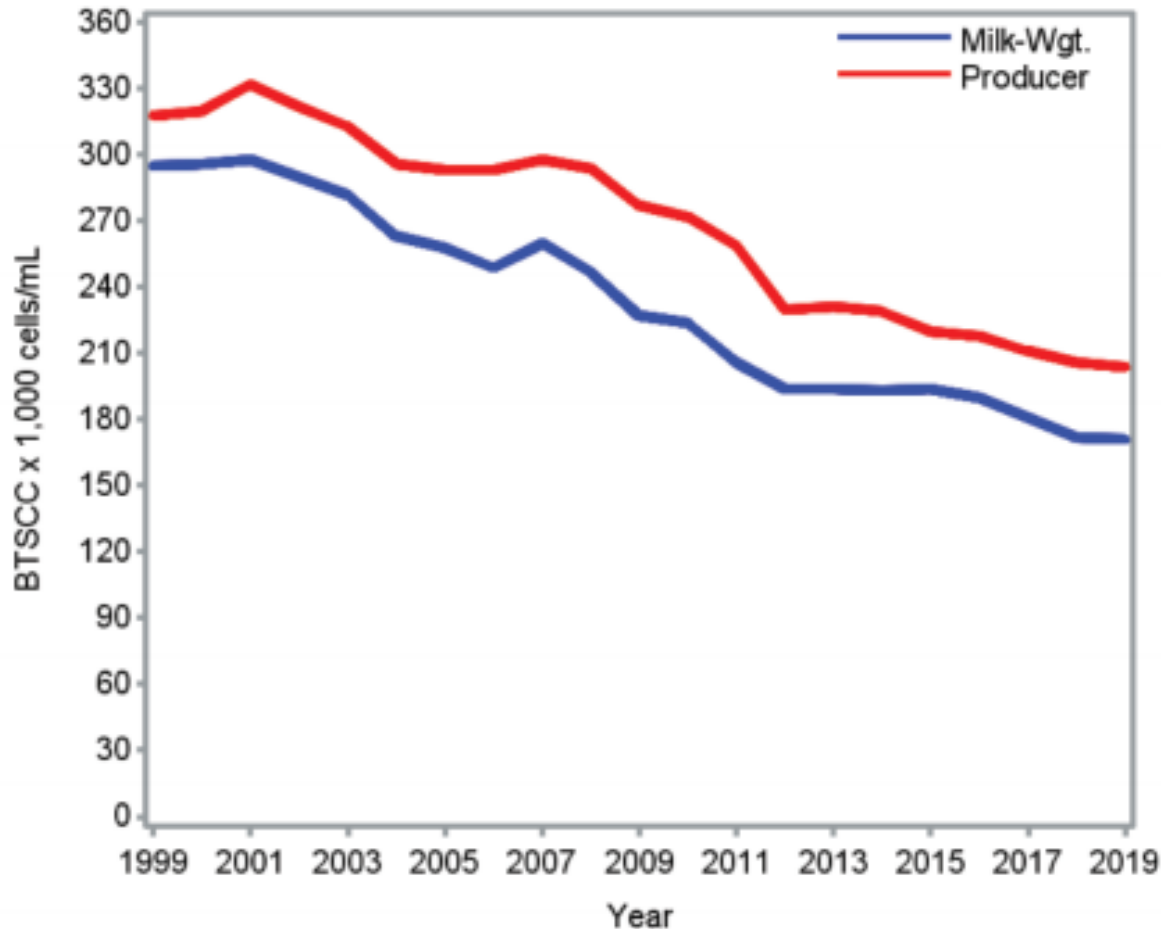
G.2.b. Percentage of cows treated with dry-cow IMM antimicrobials at dry-off, by herd size and by region:

Percent Cows											
Herd size (number of cows)						Region					
Small (30–99)		Medium (100–499)		Large (500+)		West		East		All operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
81.9	(4.5)	82.6	(4.6)	96.4	(1.6)	94.3	(2.7)	91.9	(1.8)	93.0	(1.6)

BDCT was awesome when:

- average dry cow infected or likely to acquire a new infection
- high prevalence of “contagious” pathogens

Figure 5. Milk-weighted and producer BTSCCs for the four monitored FMMOs, by year



1985: ~45% of quarters = negative culture result

Today: 75-90% of quarters = negative culture result

Summary: Teat sealants



New IMI reduced by 25% (RR = 0.75)

Clinical mastitis reduced by 29% (RR = 0.71)

↓ new IMI at calving & Clinical mastitis



Randomized equivalence study comparing the efficacy of 2 commercial internal teat sealants in dairy cows

S. M. Rowe,^{1*}  S. M. Godden,¹  D. V. Nydam,²  A. Lago,³  A. K. Vasquez,²  E. Royster,¹ 
and J. Timmerman¹

¹Department of Veterinary Population Medicine, University of Minnesota, St. Paul 55108

²Department of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853

³Research and Development Department, DairyExperts, 1814 Rothschild Street, Tulare, CA 93274

Conclusion

- Lockout® is likely to perform similarly to Orbeseal® when used in a blanket dry cow therapy program
 - Reduce new intramammary infection
 - Reduce clinical mastitis
 - Reduce SCC





The Bovine PRACTITIONER

A randomized equivalence study evaluating the efficacy of two commercially available teat sealants in dairy cows

Michelle P. Buckley,¹ MS, DVM; **Jenna Bayne,² DVM; Tiago Tomazi,³ DVM, MS, PhD; Brian E. Miller,³ DVM; Sandra M. Godden,⁴ DVM, DVSc; Gustavo S. Silva,² DVM, MS, PhD; *Patrick J. Gorden,² DVM, PhD

¹Department of Veterinary Microbiology and Preventative Medicine, Iowa State University, Ames, IA 50011

²Department of Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames, IA 50011

³Dairy Technical Services, Merck Animal Health, Lenexa, KS 66219

⁴Department of Veterinary Population Medicine, University of Minnesota, St. Paul, MN 55108

No meaningful differences in bioeconomic health and production outcomes





Contents lists available at ScienceDirect

Preventive Veterinary Medicine

journal homepage: www.elsevier.com/locate/prevetmed



Evaluating the efficacy of internal teat sealants at dry-off for the prevention of new intra-mammary infections during the dry-period or clinical mastitis during early lactation in dairy cows: A systematic review update and sequential meta-analysis

S.D. Pearce^{a,*}, E.J. Parmley^a, C.B. Winder^a, J.M. Sargeant^a, M. Prashad^b, M. Ringelberg^a, M. Felker^a, D.F. Kelton^a

^a Department of Population Medicine, Ontario Veterinary College, University of Guelph, Guelph, ON N1G 2W1, Canada

^b Data Resource Centre, University of Guelph, Guelph, ON N1G 2W1, Canada

“Based on all the evidence available, sufficient research exists for practical use, and cessation of future research until substantial changes to Teat Sealant application occurs”



Selective Dry Cow Therapy for Treatment and Control of Mastitis

Why do this?

**Make More Money
while not compromising animal health**

- Save money on tubes (and maybe labor)
- Decrease risk of residues
- Bogey man
 - Someone tells you that you have to
 - Mitigate risk of antimicrobial resistance
- (Sell more milk?)

STATE OF NEW YORK

5742--A

2019-2020 Regular Sessions

IN SENATE

May 14, 2019

Introduced by Sens. KAVANAGH, HOYLMAN -- read twice and ordered printed, and when printed to be committed to the Committee on Higher Education -- committee discharged, bill amended, ordered reprinted as amended and recommitted to said committee

AN ACT to amend the education law and the state finance law, in relation to protecting medically important antimicrobials for human public health

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

1 Section 1. Legislative findings. The legislature declares that the
2 overuse and misuse of medically important antimicrobials poses a serious
3 public health threat.



AMERICAN ASSOCIATION OF BOVINE PRACTITIONERS

Senator Brian Kavanagh
Legislative Office Building
Room 512
Albany, NY 12247

The American Association of Bovine Practitioners (AABP) is an association of cattle veterinarians serving society as leaders in cattle health, welfare and productivity. Our organization of more than 5,000 members represents cattle veterinarians primarily in the U.S. and Canada with members also in 34 countries. AABP has 193 member veterinarians in New York.

I am writing to oppose S. 5742 for the specific reasons that are outlined in this letter.

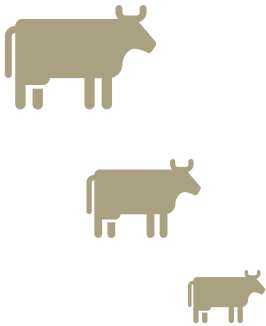
Similar legislation passed or proposed in Maryland, Illinois, Oregon, California



Selective Dry Cow Therapy (SDCT)

Why is it important to consider if your dairy is a good candidate for SDCT?

Legislation is likely to enforce selective use of dry cow antibiotics one day.



Example #2

- European Union Jan 2022: banned prophylactic use of antibiotics on farms

(44) Antimicrobial medicinal products should not be used for prophylaxis other than in exceptional cases only for the administration to an individual animal.

(16) 'prophylaxis' means the administration of a medicinal product to an animal or group of animals before clinical signs of a disease, in order to prevent the occurrence of disease or infection;

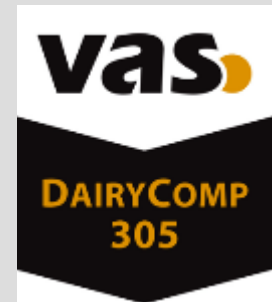
Selective Dry Cow Therapy (SDCT)

Identifying and treating ONLY cows/quarters that currently have or are at risk for infections

Which cows/quarters to treat?

NEEDS: accurate, quick, cheap

Currently available tools for identifying cows:



Cowside

Culture



On-farm records

The question?

If an on-farm algorithm was used to identify and not treat “low risk” cows, would the cows experience negative outcomes?



J. Dairy Sci. TBC:1–17
<https://doi.org/10.3168/jds.2017-13807>
© American Dairy Science Association®, TBC.

Use of a culture-independent on-farm algorithm to guide the use of selective dry-cow antibiotic therapy

A. K. Vasquez,* D. V. Nydam,*¹ C. Foditsch,* M. Wieland,* R. Lynch,† S. Eicker,‡ and P. D. Virkler*

*Department of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, and

†Pro-Dairy, Department of Animal Science, Cornell University, Ithaca, NY 14853

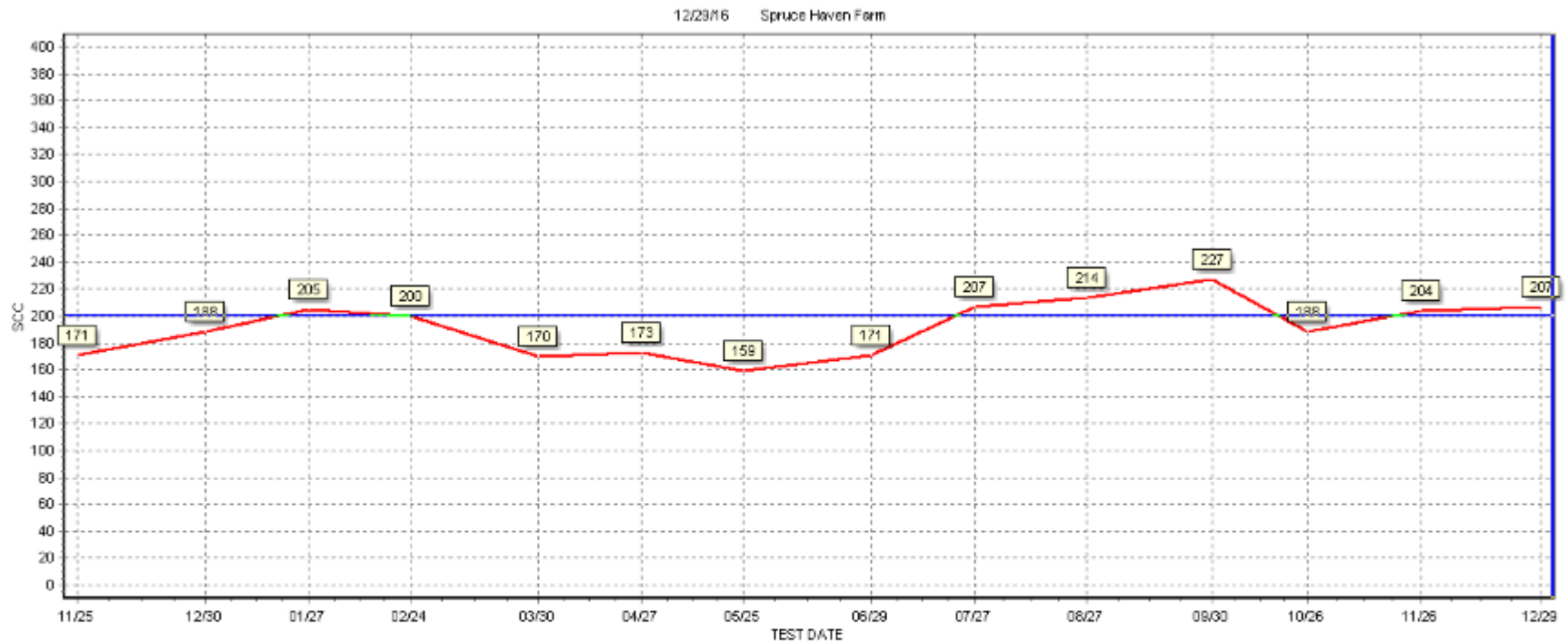
‡Valley Agricultural Software, King Ferry, NY 13081



- NY
- 1800 milking cows
- DHIA testing
- Dry once per week




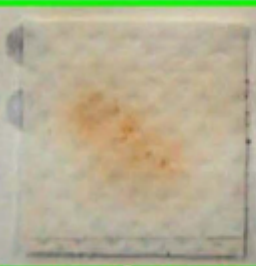
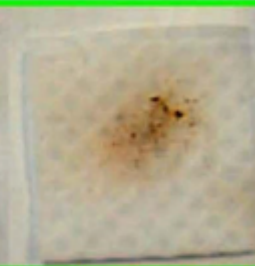
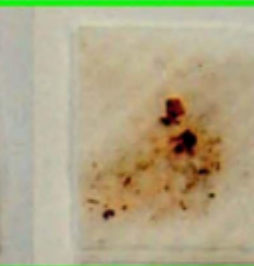
BT SCC during trial 171 k – 227 k



- Bulk tank test day SCC remained in a similar range for the December test day.

A good herd, but not the best...

Teat Cleanliness Scorecard

1	2	3	4
Clean: No manure, dirt, or dip	Dip Present: No manure or dirt	Small amount of dirt and manure present	Larger amount of dirt and manure present
			
22 (18%)	33 (28%)	53 (44%)	12 (10%)

- **54% of the teat ends that we scored were too dirty.** This is still a large opportunity area to improve as the goal would be to have less than 10% in category 3 or 4. The number of cows with poor teat ends is not making it easy for the milkers but they should be able to get much closer to the goal with the proper technique.
- **I would recommend that you start scoring teat end cleanliness by milker on a regular basis and include a refresher on this topic in your next milker training session.**



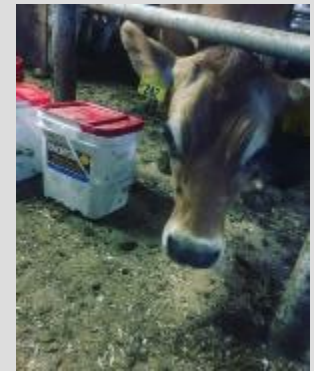
Quality Milk
Production Services

Computer Algorithm

- Last test SCC \leq 200k
- Avg SCC last 3 test-days \leq 200k
- \leq 1 case of clinical mastitis
- No current symptoms of clinical mastitis
- No mastitis in the last 30 days



Study Design



**Cows Due To Dry
(1800/yr)**

Run Algorithm

Low Risk

High Risk

64% cows =
low risk

Randomize

**IMM
Cephapirin
And Sealant
(HIGH)**

**IMM
Cephapirin
benzathine
And Sealant
(ABXTS)**

**Sealant
Only
(TS)**

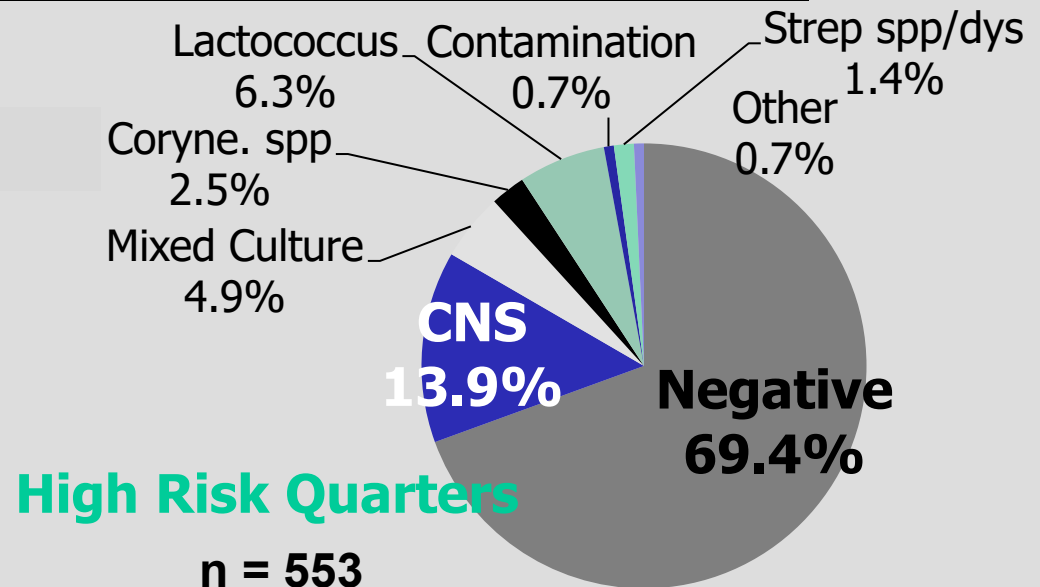
There were similar numbers of cows and quarters in each treatment group

	ABXTS	TS	Total
Cows	304	307	611
Quarters	1040	1058	2098
Percentage	50%	50%	



Pre “treatment” quarter-level culture results at dry-off

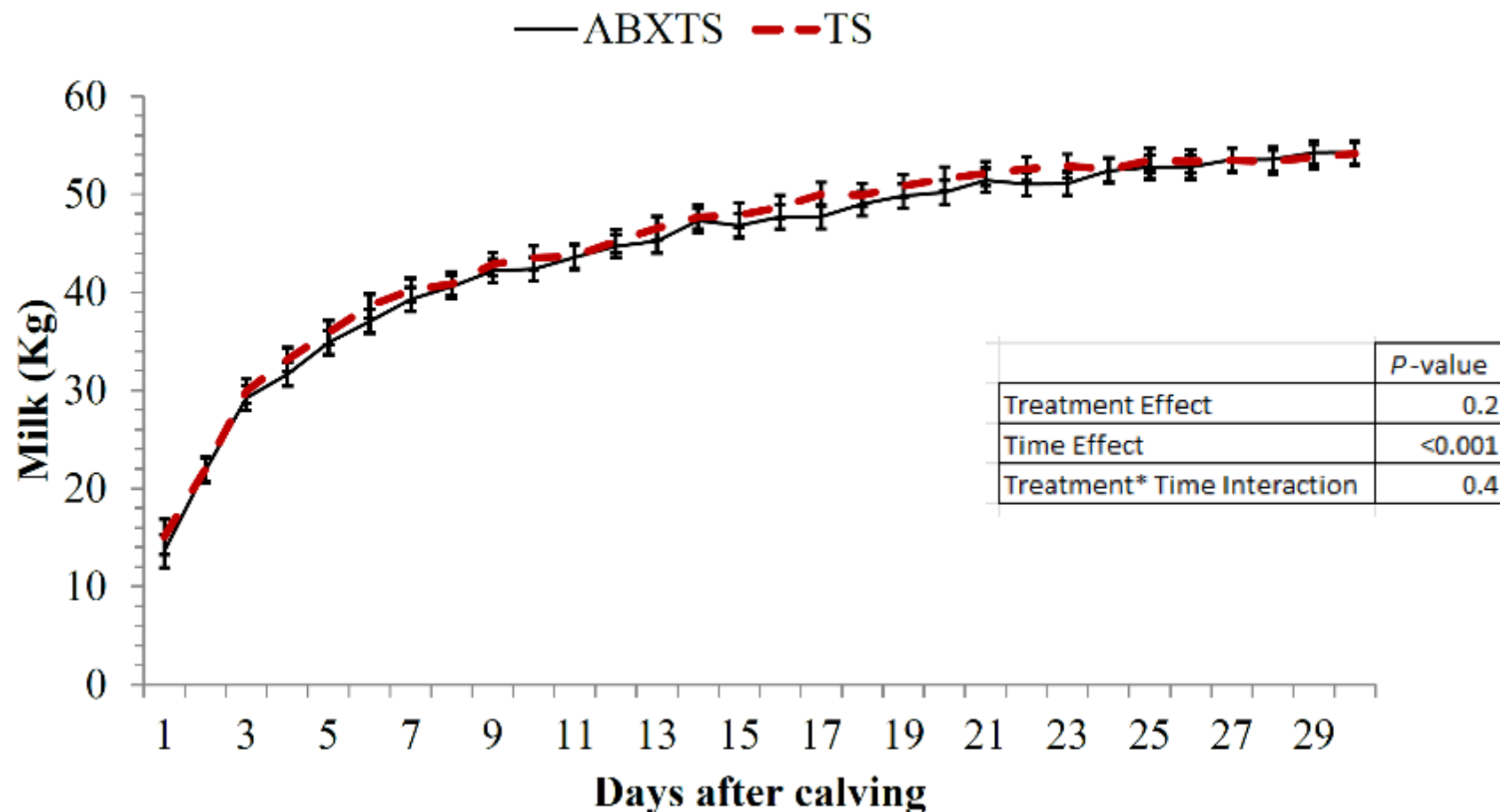
	Treatment Group				P-value
	Teat Sealant (n =1204)		Antibiotics & Teat Sealant (n =1183)		
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>	
Negative	1086	90.2	1064	90.0	0.84
Coagulase negative <i>Staphylococcus</i> spp.	59	4.9	78	6.6	0.08
Mixed Growth	22	1.8	20	1.7	0.88
<i>Corynebacterium</i> spp.	24	2.0	12	1.0	0.06
<i>Lactococcus</i> spp.	5	0.4	4	0.3	> 99.99
<i>Streptococcus</i> spp.	2	0.2	1	0.1	> 99.99
Other	6	0.5	4	0.3	0.75
Total intramammary infections	114	9.5	115	9.7	0.84



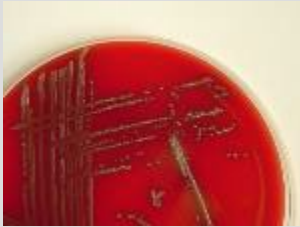
Results



Milk yield over the first 30 days was similar between groups



Summary:



1. Bacteriological Cure



= YES

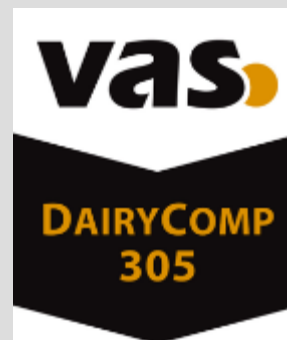


2. New Infection Risk



= NO

3 & 4. First test milk production and linear score (LS) = NO



5. Risk of survival and mastitis 30 days = NO



J. Dairy Sci. 103:6473–6492
<https://doi.org/10.3168/jds.2019-17728>

© 2020 American Dairy Science Association®. Published by Elsevier Inc. and Fass Inc. All rights reserved.

Randomized controlled non-inferiority trial investigating the effect of 2 selective dry-cow therapy protocols on antibiotic use at dry-off and dry period intramammary infection dynamics

S. M. Rowe,^{1*} S. M. Godden,¹ D. V. Nydam,² P. J. Gorden,³ A. Lago,⁴ A. K. Vasquez,² E. Royster,¹ J. Timmerman,¹ and M. J. Thomas⁵

¹Department of Veterinary Population Medicine, University of Minnesota, St. Paul 55108

²Department of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853

³Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames 50011

⁴Research and Development Department, DairyExperts, Tulare, CA 93274

⁵Dairy Health and Management Services, Lowville, NY 13367

Acknowledgements

Funding

USDA-NIFA Grant: 2013-67015-28258



In-kind support



Fieldwork teams



J. Dairy Sci. 103:6493–6503
<https://doi.org/10.3168/jds.2019-17961>

© American Dairy Science Association®, 2020.

Randomized controlled trial investigating the effect of 2 selective dry-cow therapy protocols on udder health and performance in the subsequent lactation

S. M. Rowe,^{1*} S. M. Godden,¹ D. V. Nydam,² P. J. Gorden,³ A. Lago,⁴ A. K. Vasquez,² E. Royster,¹ J. Timmerman,¹ and M. J. Thomas⁵

¹Department of Veterinary Population Medicine, University of Minnesota, St. Paul 55108

²Department of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853

³Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames 50011

⁴DairyExperts, Tulare, CA 93274

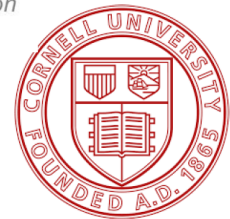
⁵Dairy Health & Management Services, Lowville, NY 13367

Study type

- Randomized controlled trial
- Enrollment
 - Summer 2018
 - 7 herds from 4 sites
 - 1275 cows randomly assigned
 - Blanket DCT (n = 429)
 - Culture based SDCT (n = 432)
 - Algorithm based SDCT (n = 414)



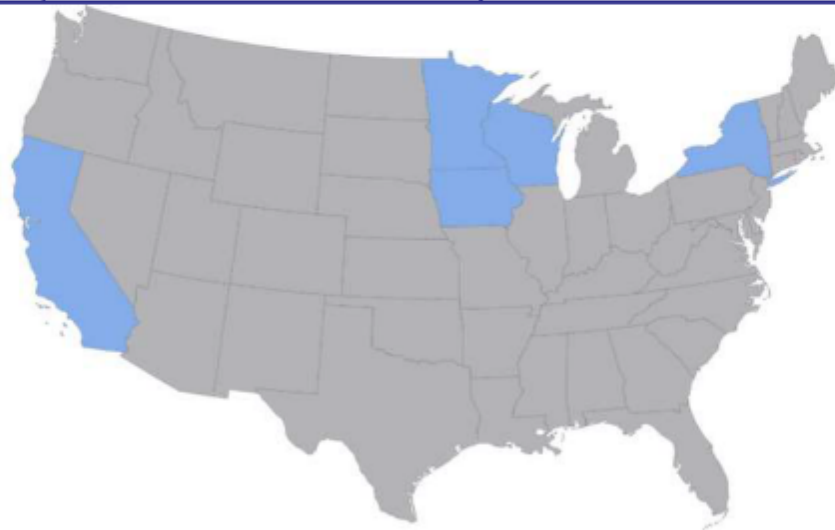
IOWA STATE
UNIVERSITY



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

Herds

Herd	Milking herd	BTSCC	Dry cow bedding	Lactating cow bedding	Vax
A	850	200	Sand	Sand	J-vac
B	1150	100	Sand	Sand	J-vac
C	1500	150	Sand	Sand / Compost pack	Enviracore
D	5700	230	Manure solids (dry lot)	Manure solids (Freestall)	J-vac
E	3600	220	Manure solids (dry lot)	Manure solids (Freestall)	J-vac
F	950	110	Compost pack	Manure solids (Freestall)	Enviracore
G	1750	90	Sand	Sand	Endovac bovi



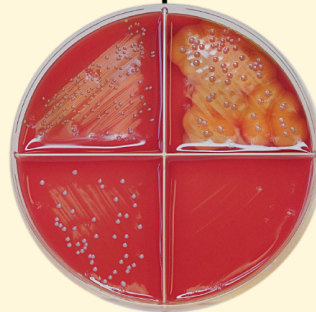
ENROLLMENT
(2d before DO)

BLANKET
(n=429)

CULTURE
(n=432)

ALGORITHM
(n=414)

Milk samples
swabbed onto MN
Easy 4Cast plate



Treatment criteria

SCC \geq 200,000 cells/mL at any test
during current lactation

Clinical mastitis within 14 days of
dry-off

\geq 2 clinical mastitis events in the
current lactation

DRY OFF

All quarters
ITS + ABX

Culture positive
quarters
ITS + ABX

Culture negative
quarters
ITS

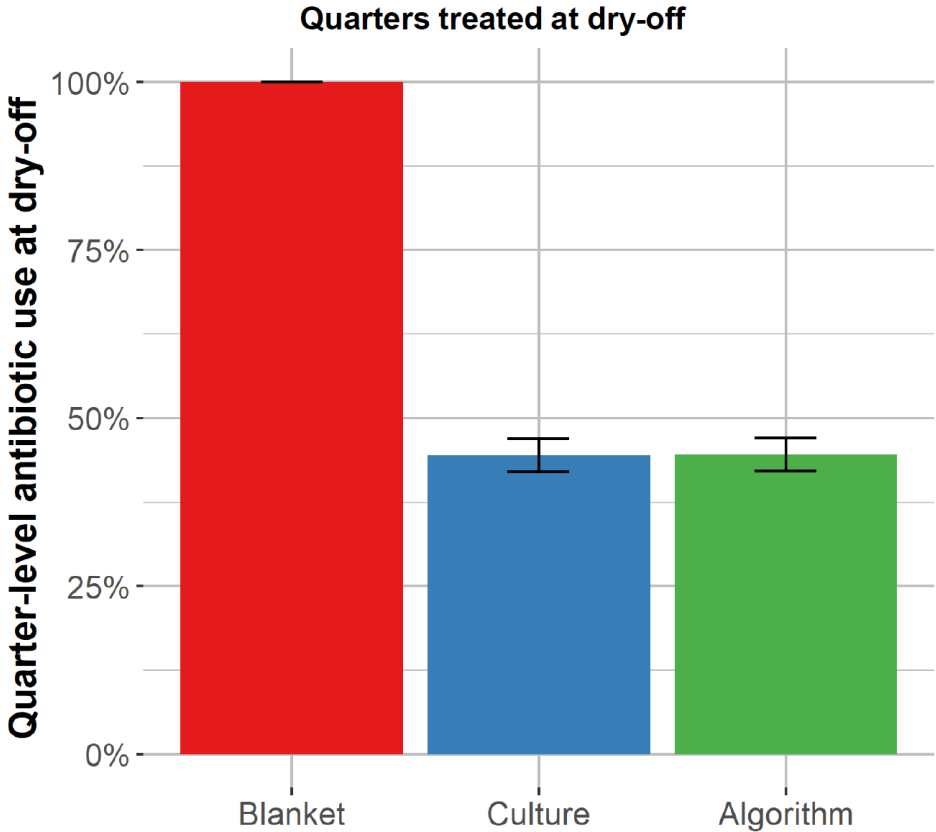
Meet any criteria
ITS + ABX

Meet no criteria
ITS

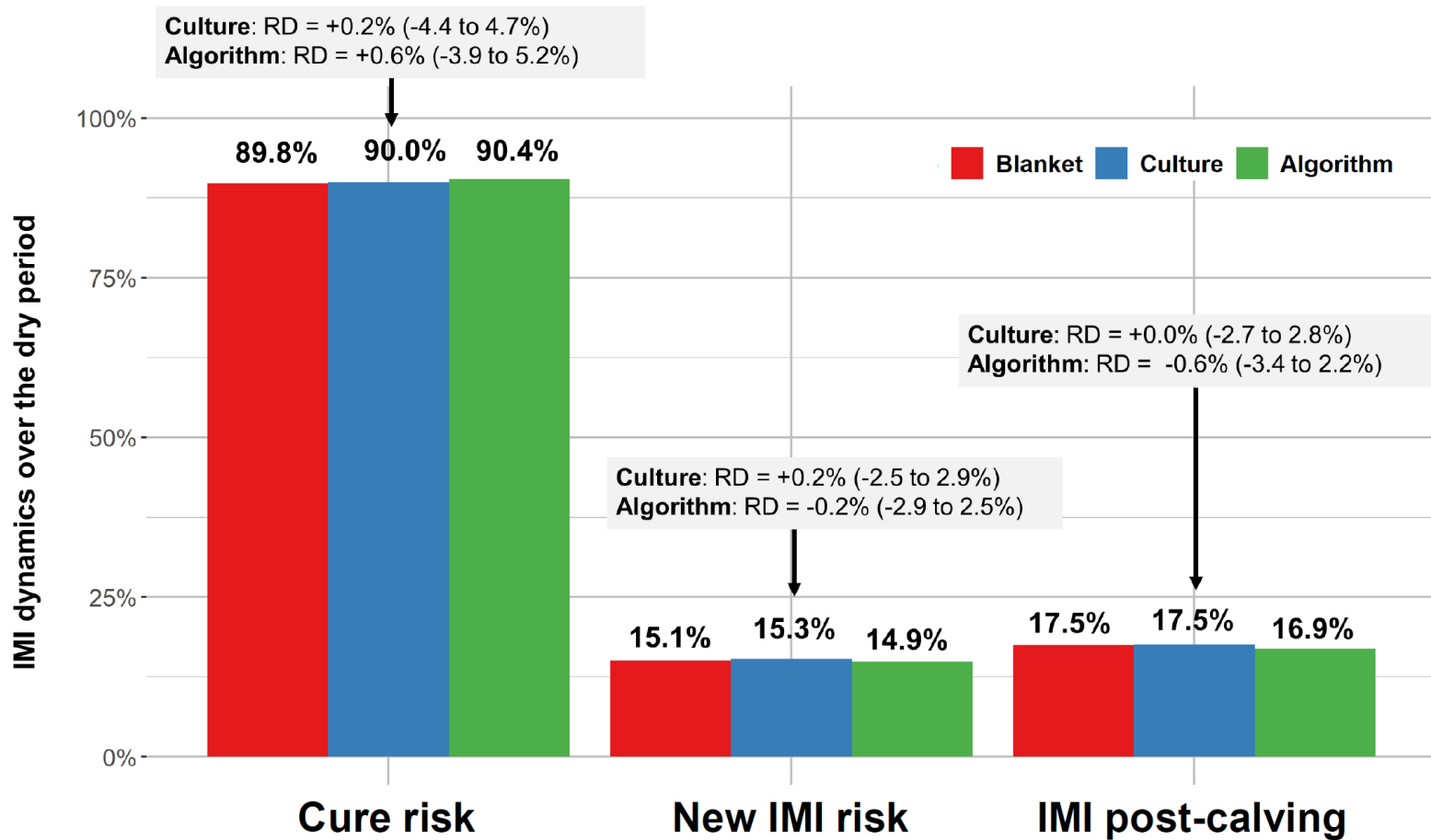
FOLLOW UP

120 DIM

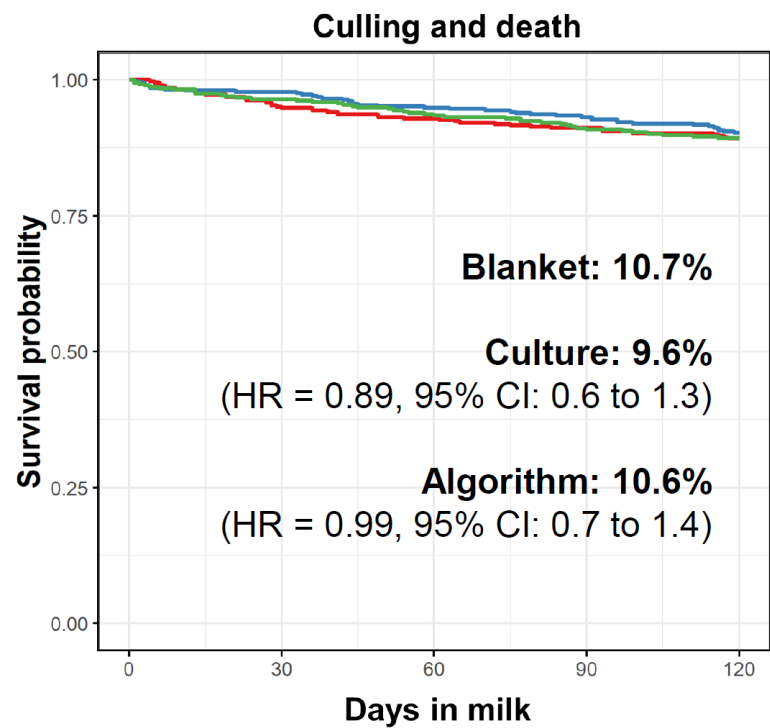
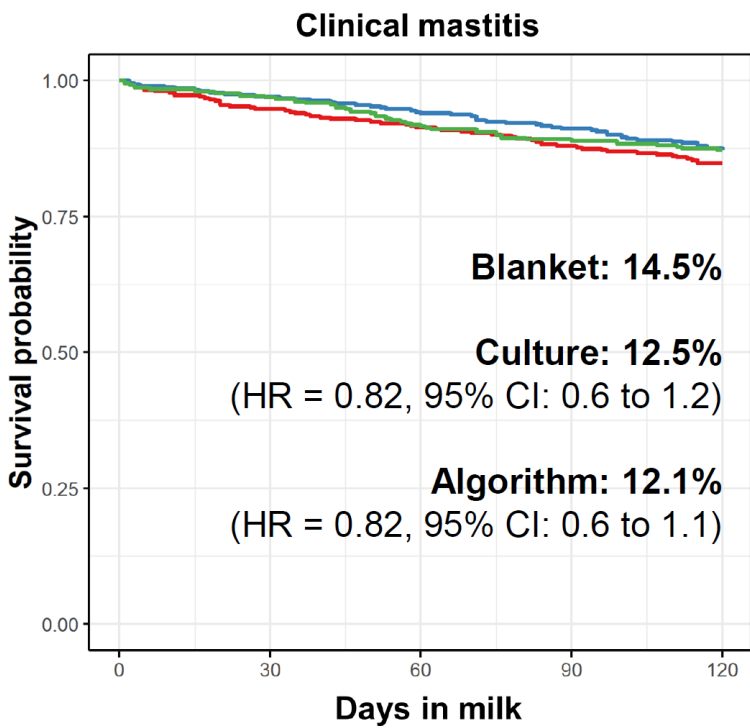
Antibiotic use was reduced by 55%



Quarter-level outcomes were similar

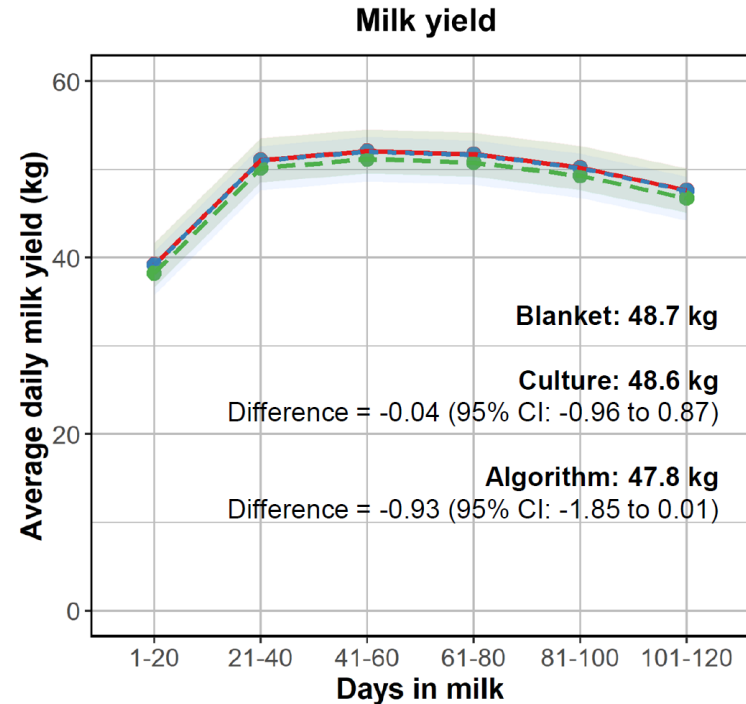
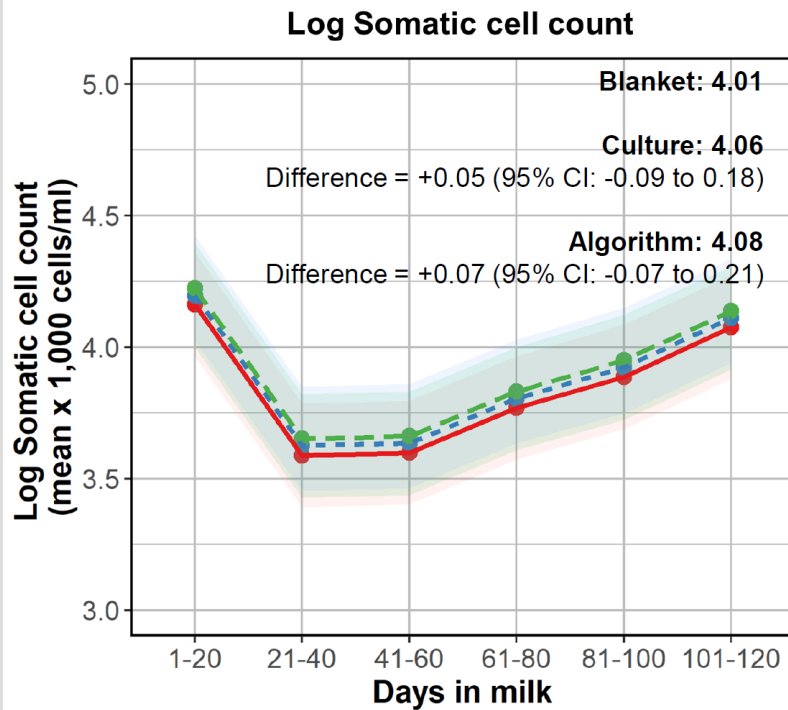





SDCT had similar effects on health (1 – 120 DIM)



— Blanket — Culture — Algorithm

SDCT had similar effects on milk production and quality from 1 – 120 DIM



Tx  **Blanket**  **Culture**  **Algorithm**



Conclusions

- Selective DCT is an important opportunity we have to reduce antibiotic use on dairy farms
- In our study, Culture and Algorithm protocols reduced antibiotic use by 55% without any negative effects on health and productivity
- Selective DCT should be carefully implemented, under the supervision of a veterinarian



Minnesota Easy™ 4Cast® plate



UNIVERSITY OF MINNESOTA

Driven to DiscoverSM



Partial budget analysis of culture- and algorithm-guided selective dry cow therapy

S. M. Rowe,^{1,2*} D. V. Nydam,³ S. M. Godden,¹ P. J. Gorden,⁴ A. Lago,⁵ A. K. Vasquez,³ E. Royster,¹ J. Timmerman,¹ M. J. Thomas,⁶ and R. A. Lynch⁷

¹Department of Veterinary Population Medicine, University of Minnesota, St. Paul 55108

²Faculty of Science, Sydney School of Veterinary Science, The University of Sydney, Camden, New South Wales 2570, Australia

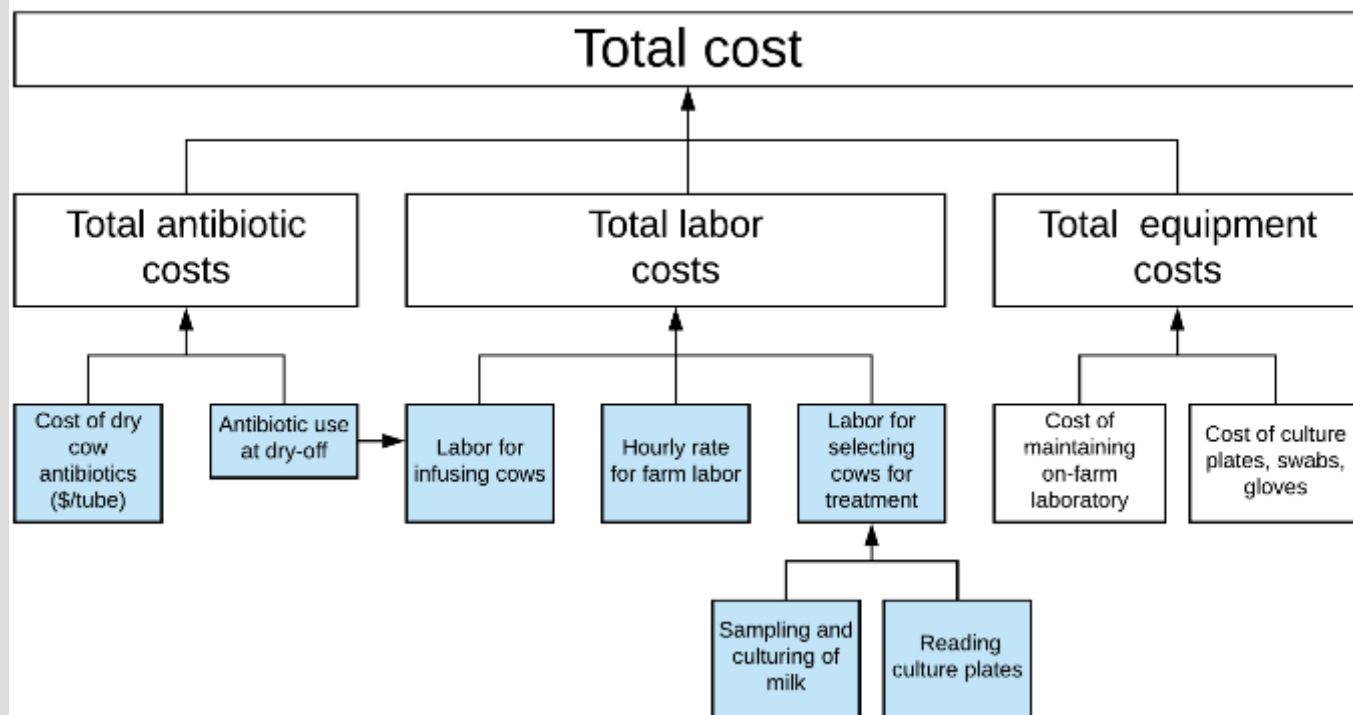
³Department of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853

⁴Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames 50011

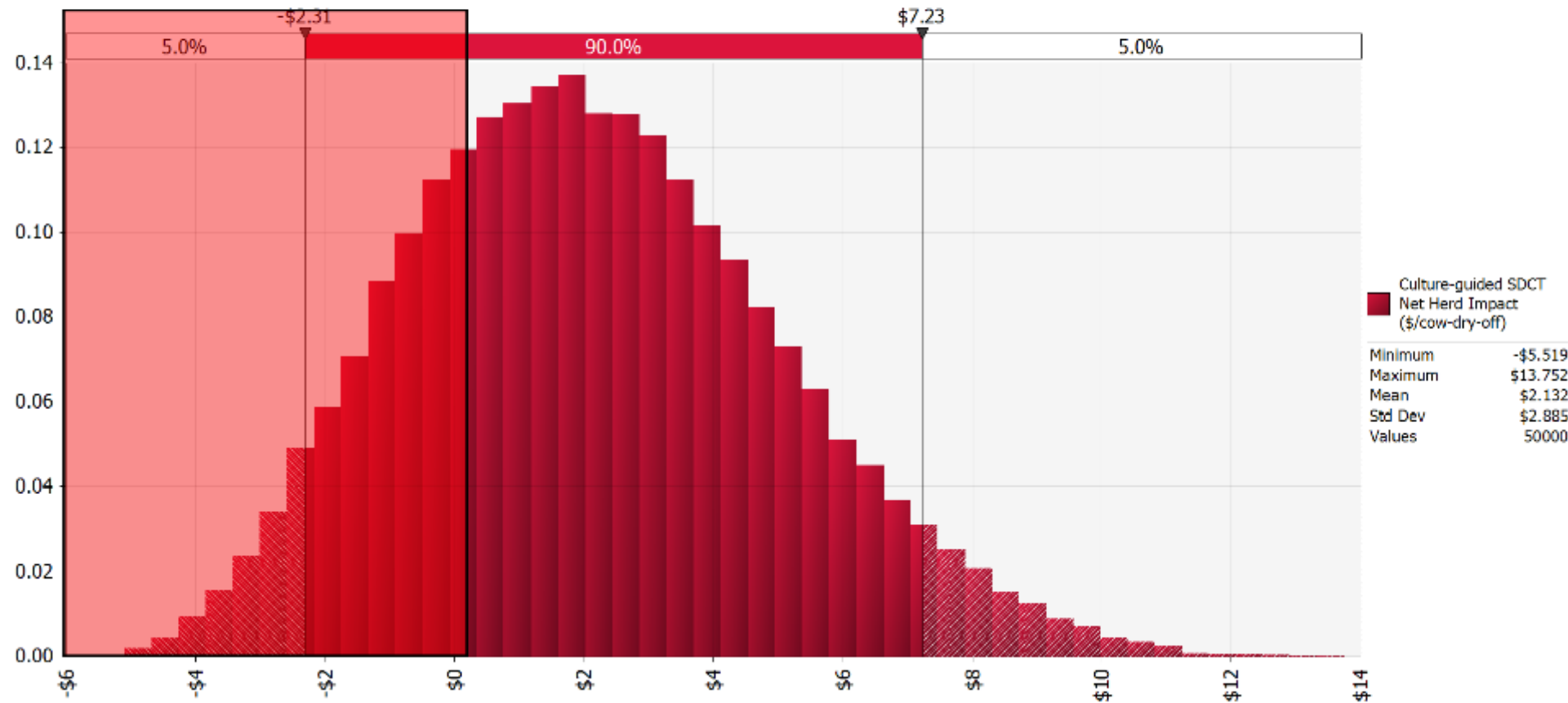
⁵DairyExperts, Tulare, CA 93274

⁶Dairy Health & Management Services, Lowville, NY 13367

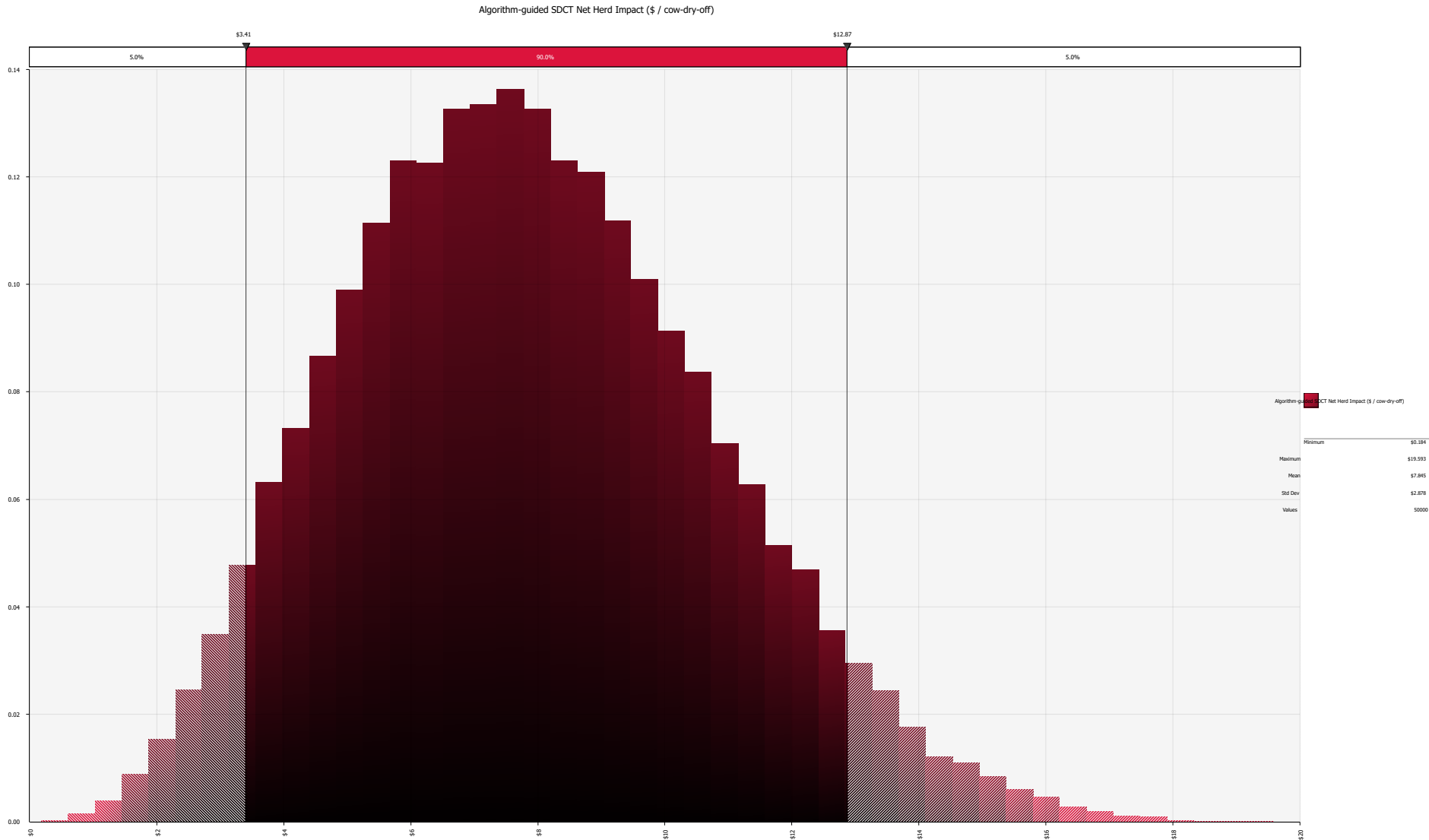
⁷Pro-Dairy, College of Agriculture and Life Sciences, Cornell University, Ithaca, NY 14853



Culture-guided SDCT



Relative frequency graph showing 50,000 iterations for the herd net economic impact of **algorithm-guided** SDCT (\$ / cow-dry-off). The **mean herd net economic impact was \$7.85**, indicating that on average, a herd switching from BDCT to algorithm-guided SDCT could expect to save \$7.85 per cow-dry-off. 100% of iterations had a net economic impact of \$0.00 or greater, indicating that algorithm-guided SDCT was a profitable practice in all herd conditions evaluated



<https://dairyknow.umn.edu/research/udder-health/selective-dry-cow-therapy-cost-calculator/>

Selective Dry Cow Therapy Cost Calculator

Enter your information below to compare the cost of dry cow therapy strategies in your herd

Number of cows dried off per year

0

Do you conduct monthly DHI tests?

Yes

No

Cost of dry cow therapy tubes (\$/tube)



Cost of internal teat sealant (\$/tube)



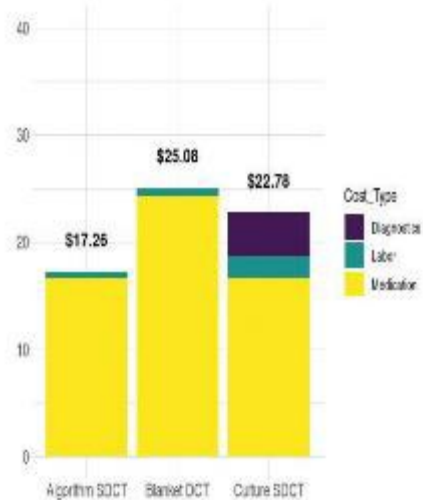
Expected percent of quarters treated using SDCT



Approximate hourly rate for farm workers



Cost (\$) of each dry cow therapy approach



Culture SDCT

Culture-guided selective DCT will cost \$2.30 LESS per dry-off than blanket DCT. The estimated annual cash impact on your farm is +\$0.00

Algorithm SDCT

Algorithm-guided selective DCT will cost \$7.82 LESS per dry-off than blanket DCT. The estimated annual cash impact on your farm is +\$0.00

SDCT: What herds?

- Veterinarian of record involvement
 - Constitutes prescribing
- Bulk tank SCC <250,000
- Limited “contagious pathogens”
 - No Strep ag, little Staph aureus
- Good herd records
- Ability to implement new management
- Mastitis pathogen surveillance





Dry-off routine should not introduce mastitis

- How are cows sorted and held prior to dry-off?
- Dried-off after last milking of lactation?
 - Ensure units and deck have not accumulated “debris”
- Check IDs and work list; leg bands
- Teat end cleanliness; far to near with alcohol
- Hygienic insertion of Abx and Teat sealant; near to far





Controlling the Dry-Off Procedure on Your Dairies – Getting Involved, Monitoring, and Training for Improvement

Wolfgang Heuwieser, DVM

Valeria Gallardo, DVM

Michael Zurakowski, DVM

Rachel Moody, MS

Paul Virkler, DVM

Quality Milk Production Services

607-229-5985 (Paul)

pdv3@cornell.edu



Cornell University
Animal Health Diagnostic Center





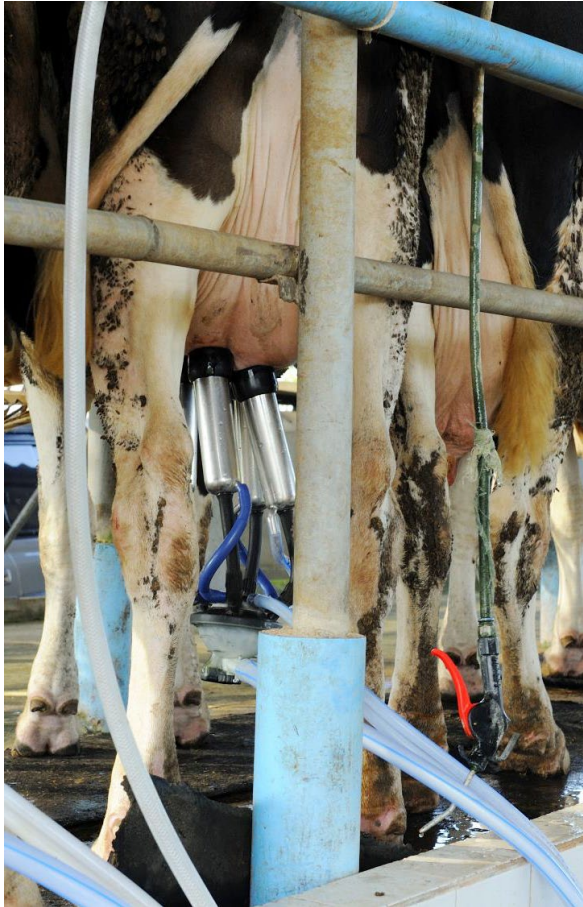
Phase 1 Module Design

- Access by QR code



- Or directly to: <https://dairyroutines.jimdo.com/>



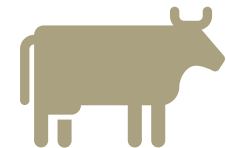


Supporting The Implementation and Monitoring of Selective Dry Cow Therapy (SDCT) on NY State Dairy Farms

Amber Forrestal, DVM, QMPS, Perry Veterinary Clinic

AABP 9/24/2022

- Tracy Potter, DVM, QMPS, Perry Veterinary Clinic
- Daryl Nydam, DVM, PhD, Cornell University
- Michael Capel, DVM, Perry Veterinary Clinic

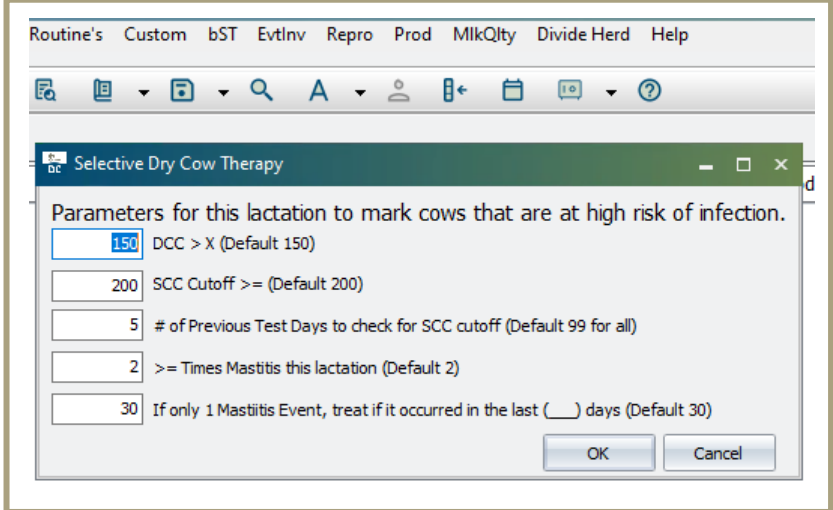


Cow Selection Criteria All farms algorithm-based (vs. culture, CMT)

DairyComp305 SDCT Algorithm High Risk Cows



- $SCC \geq 200$ any test day through lactation
- ≥ 2 mastitis events
- If 1 mast event, must be > 30 days before dry off
- Dry off list populated with Y or N



Routine's Custom bST EvtInv Repro Prod MilkQty Divide Herd Help

Selective Dry Cow Therapy

Parameters for this lactation to mark cows that are at high risk of infection.

150 DCC > X (Default 150)

200 SCC Cutoff >= (Default 200)

5 # of Previous Test Days to check for SCC cutoff (Default 99 for all)

2 >= Times Mastitis this lactation (Default 2)

30 If only 1 Mastitis Event, treat if it occurred in the last () days (Default 30)

OK Cancel

<https://vas.com/blog/2022/01/07/how-to-set-up-selective-dry-cow-therapy-with-dairycomp/>

Enable SDCT Option in ECON

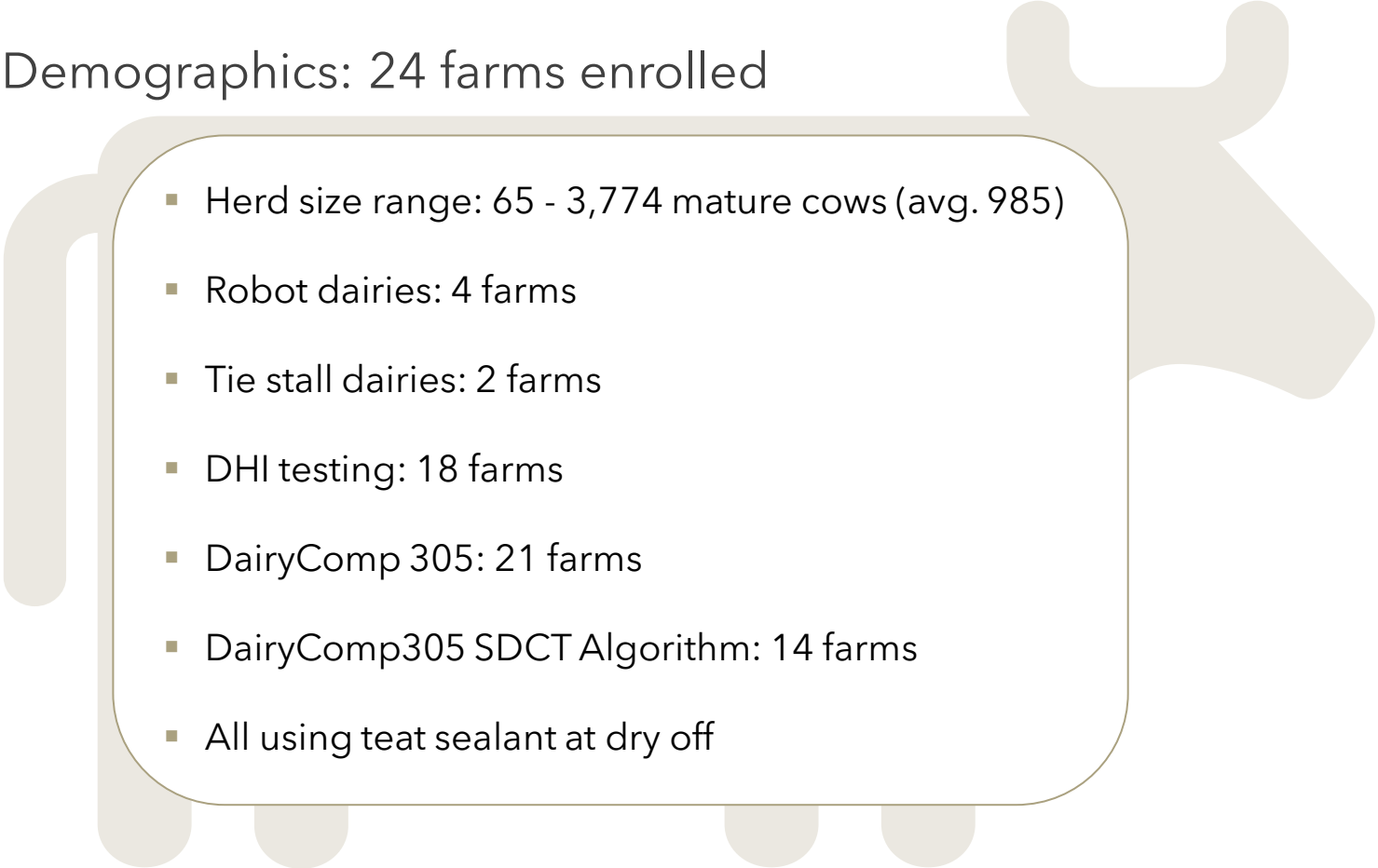
- ECON\SDCT

Selective Dry Cow Therapy

- Parameters for this lactation to mark cows that are at high risk of
- DCC > X (Default 150)
- SCC Cutoff >= (Default 200)
- # of Previous Test Days to check for SCC cutoff (Default 99 for all)
- >= Times Mastitis this lactation (Default 2)



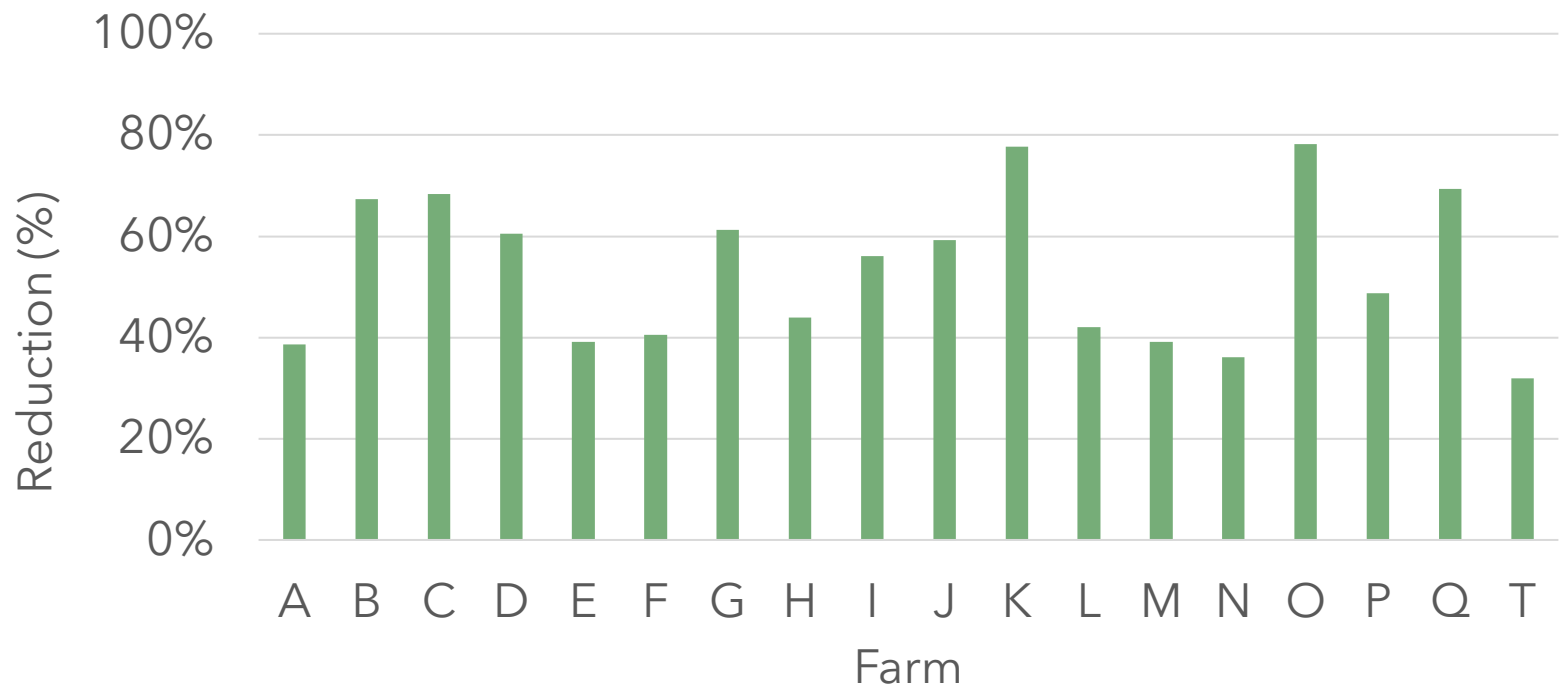
Herd Demographics: 24 farms enrolled

- 
- Herd size range: 65 - 3,774 mature cows (avg. 985)
 - Robot dairies: 4 farms
 - Tie stall dairies: 2 farms
 - DHI testing: 18 farms
 - DairyComp 305: 21 farms
 - DairyComp305 SDCT Algorithm: 14 farms
 - All using teat sealant at dry off

Reduction in antibiotic use at dry-off compared to blanket dry cow therapy

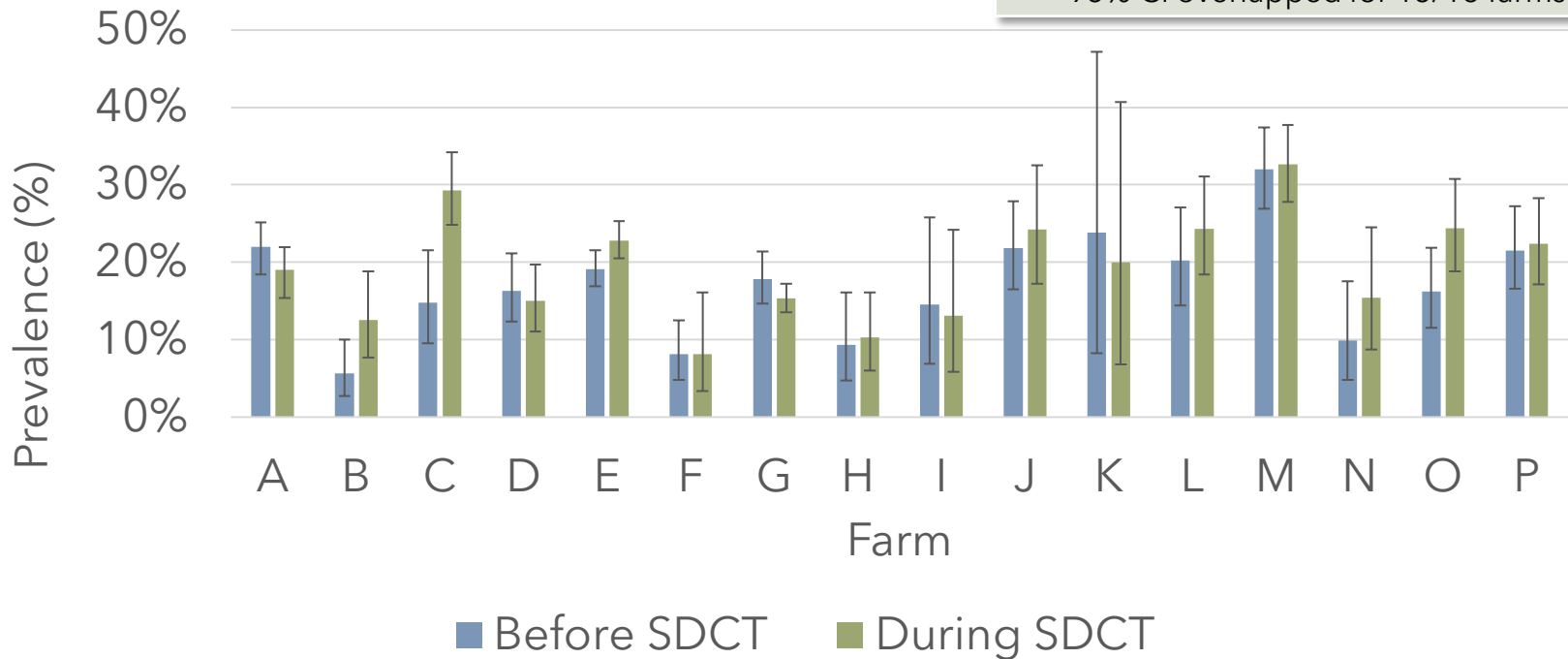


Average
53% (32-78%)



Average monthly prevalence of cows with a high ($\geq 200k$ cells/mL) first SCC test

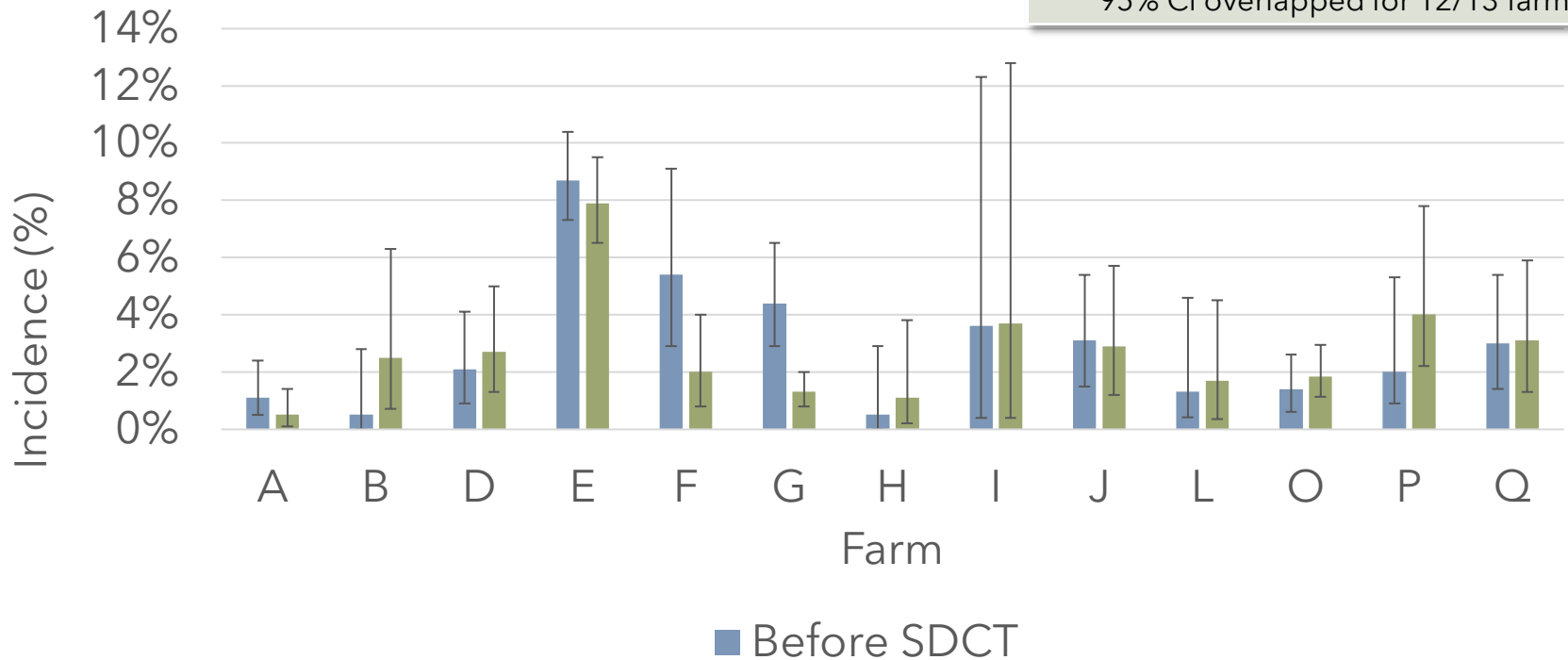
Average	
Before SDCT	During SDCT
17% (5.6-32%)	19% (8.1-33%)
95% CI overlapped for 15/16 farms	



Fresh cow mastitis incidence before and during SDCT



Average	
Before SDCT	During SDCT
2.9% (0.5-8.7%)	2.7%(0.5-7.9%)
95% CI overlapped for 12/13 farms	



Summary

- SDCT was implemented in various farms of different sizes across NY state, and an algorithm was used to determine high risk and low risk cows.
- Results show that SDCT be implemented **in the right herd** without decreasing herd health.
 - Excellent hygiene during the dry-off procedure
 - Appropriate use of teat sealants (internal > external > nothing)



Antibiotic use reduced by average of 53% across all herds.



- 4,851 cows not treated with antibiotics
- = 19,404 dry cow tubes
- ~\$60,000 not spent on dry cow tubes



Invited review: Selective use of antimicrobials in dairy cattle at drying-off

Kayley D. McCubbin,^{1,2} Ellen de Jong,^{1,2} Theo J. G. M. Lam,³ David F. Kelton,⁴ John R. Middleton,⁵ Scott McDougall,^{6,7} Sarne De Vliegher,⁸ Sandra Godden,⁹ Päivi J. Rajala-Schultz,¹⁰ Sam Rowe,¹¹ David C. Speksnijder,^{12,13} John P. Kastelic,¹ and Herman W. Barkema^{1,2*}

CONCLUSIONS

Although described selection protocols and results differed, common themes emerged that present a positive argument in favor of SDCT. Producers should be provided with SDCT protocol options that reflect their access to data as the basis of antimicrobial treatment decision-making, as well as their motivation to choose one method over another. Further, sufficient evidence supports that TSL should be included as an integral part of an SDCT protocol (Winder et al., 2019b; Kabera et al., 2021). If SDCT recommendations are practical and based on producer situations, uptake will likely increase. Furthermore, ongoing producer and veterinary education is essential to increase antimicrobial stewardship in the dairy industry (Farrell et al., 2021) and increased personal responsibility in AMR mitigation is required to promote the required behavior change (Fishbein and Cappella, 2006). In addition, proper evaluation mechanisms should be in place to evaluate impacts of introduced SDCT protocols. In summary, SDCT protocols can be enacted in countries with developed dairy industries without negative udder health and production impacts and will substantially reduce DCT-associated AMU, potentially reducing the impact on AMR.

“... SDCT protocols can be enacted in countries with developed dairy industries without negative udder health and production impacts...”

What did the 2 cows do when they met?

- They gave each other a milk shake!

