



Understanding Mastitis Economics



Jeffrey Bewley

University of Kentucky





Southeast Quality Milk Initiative

Costs of Mastitis

- Milk production losses
- Drugs
- Discarded milk
- Veterinary services
- Bonuses
- Labor
- Culling
- Other diseases



THE UNIVERSITY OF
TENNESSEE **UT**
INSTITUTE of
AGRICULTURE

VirginiaTech
1872
Invent the Future

UK Ag
DAIRY
UNIVERSITY OF
KENTUCKY

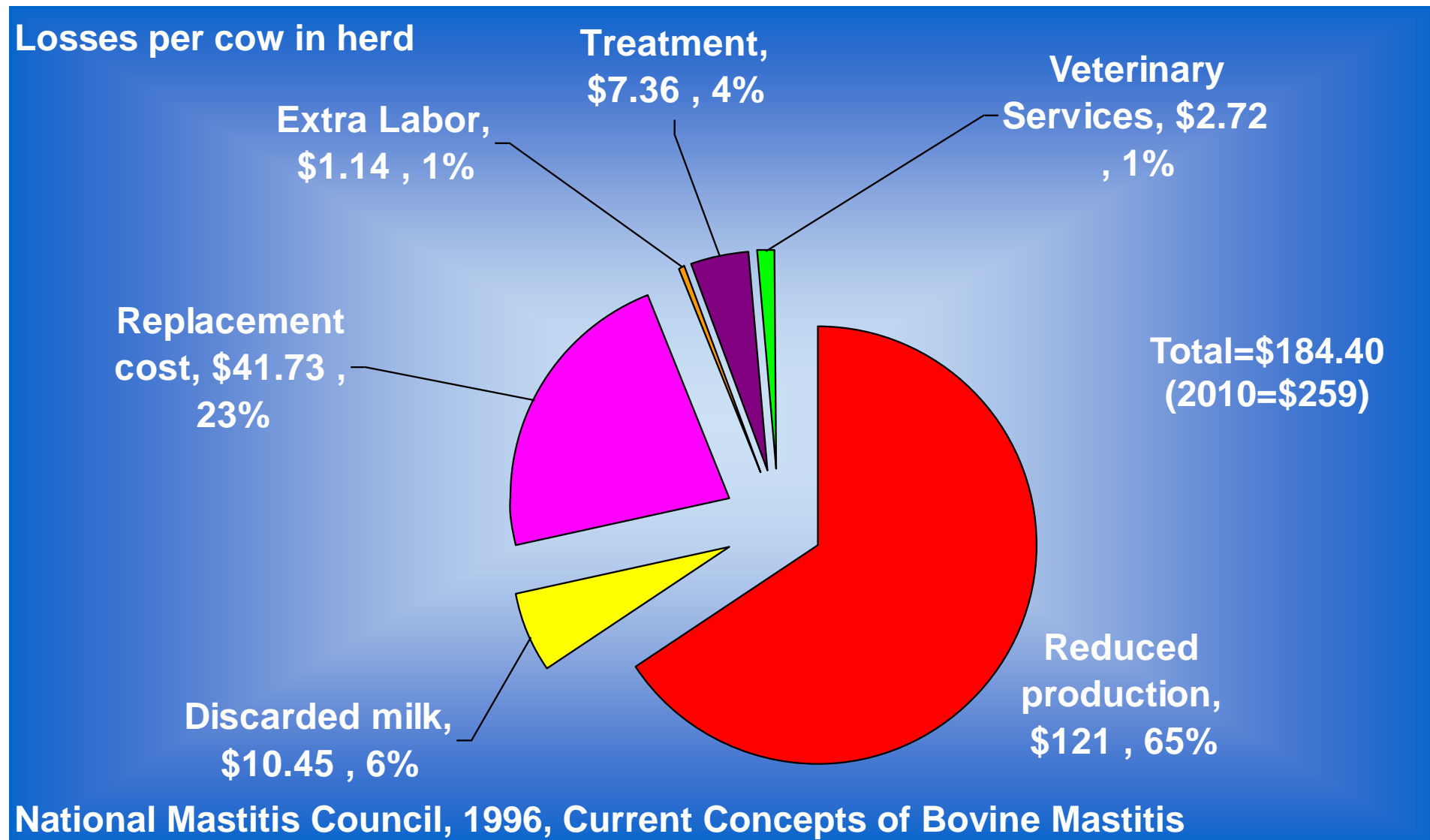


United States Department of Agriculture
National Institute of Food and Agriculture



THE UNIVERSITY OF
GEORGIA
UF UNIVERSITY of
FLORIDA

National Mastitis Council Estimated Annual Losses Due to Mastitis





Southeast Quality Milk Initiative

Industry Level Costs

- Mastitis costs the U.S. dairy industry about \$1.7 to 2 billion annually

• SO WHAT!?!?!?



United States Department of Agriculture
National Institute of Food and Agriculture





Historic View

- “Cost of disease”
- Used for policy decisions to support importance of disease for research
- Limited to direct costs (i.e. production)
- Ignore global economic effects of disease reduction
- Generally over-predictions
- Reduce credibility in the minds of farmers



United States Department of Agriculture
National Institute of Food and Agriculture



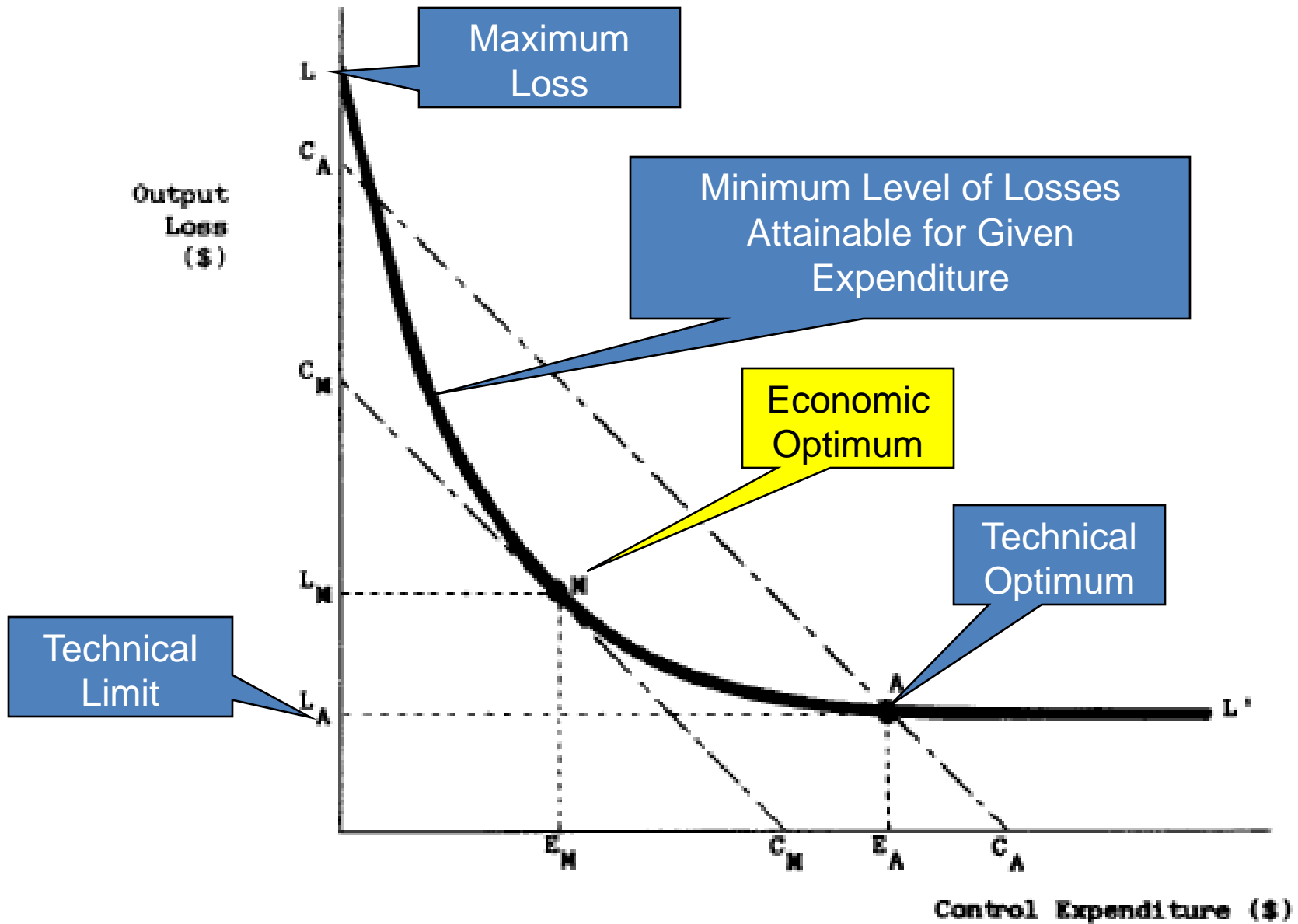
Definitions



$$C = L + E$$

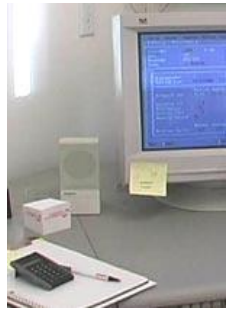
- Costs (C): represent all economic effects of disease
- Loss (L): benefit is taken away (discarded or unrealized milk, feelings/stress from death)
- Expenditure (E): extra inputs into production (drug costs, preventative measures)

The Loss Expenditure Frontier



Loss-Expenditure Frontier Example

- Subclinical mastitis costs (£172.7 million annually in 1988)
- If everyone operated at the economic optimum, costs would be £159.6 million
- Thus, disease cost could be reduced by £23.1 million by using most efficient procedures





Challenges in Estimating Mastitis Economics

- Variation by country or region
 - Milk quota vs. Free market
 - Varying pricing strategies
 - Costs of drugs/veterinary services
- Changes in milk quality premiums
- Time value of money
- Difficult to obtain estimates for models
- Pathogen variation
- Farm variation





Southeast Quality Milk Initiative

Cost of Culling

- Oversimplified methodology: difference between slaughter value and cost of replacement
- Correct methodology: retention pay-off
- Retention pay-off is the difference between:
 - The predicted future income of the animal in question
 - The predicted future income of her potential replacement
- Requires the use of simulation and/or dynamic programming



United States Department of Agriculture
National Institute of Food and Agriculture





Southeast Quality Milk Initiative

Treatment Economics Factors

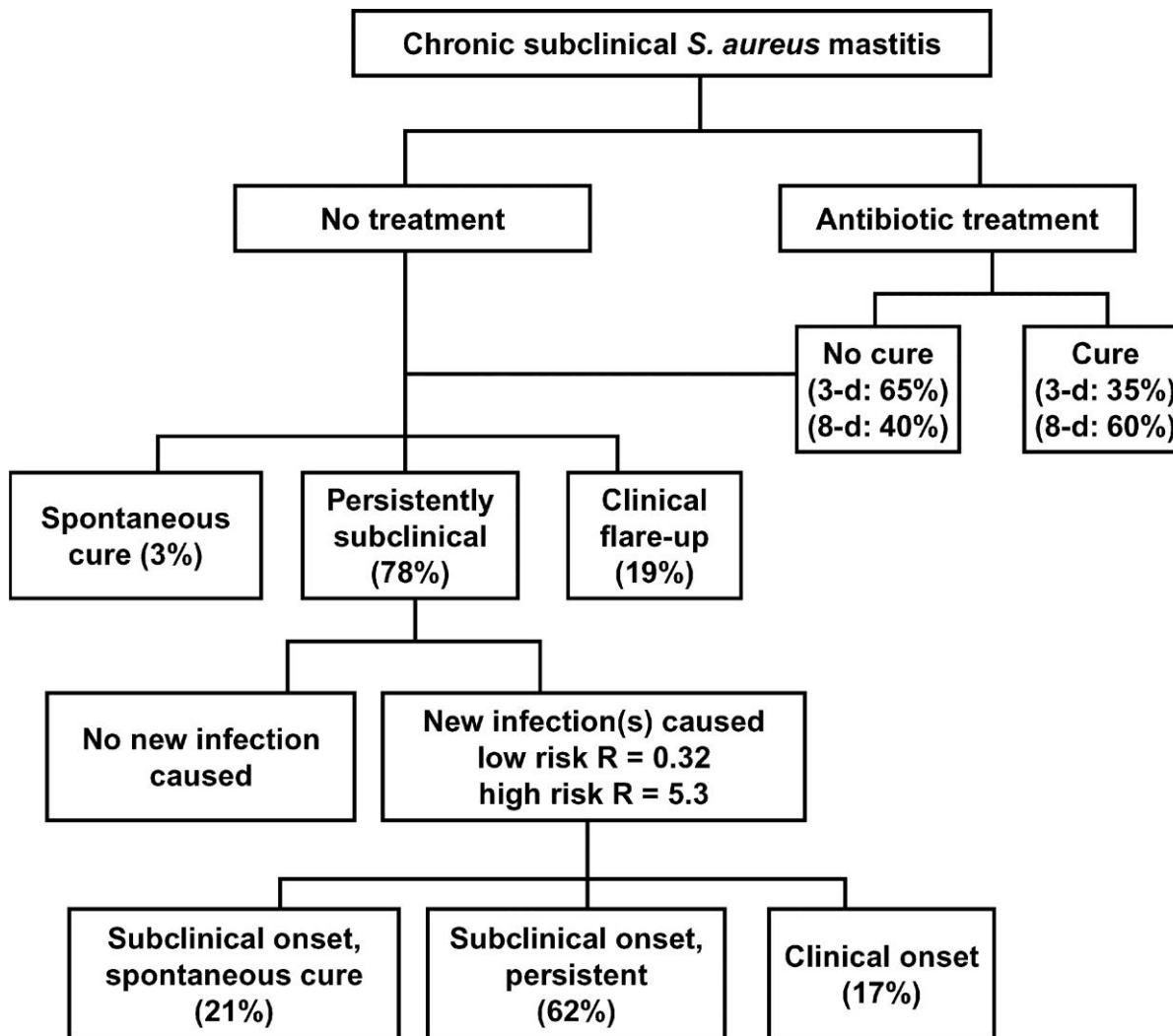
- Drug Costs
- Withdrawal period
- Treatment duration
- Pathogen
- Antibiotic susceptibility
- Losses if left untreated
- Cow age
- Production level
- Immune status
- Pregnancy status
- Genetic potential
- Previous infections



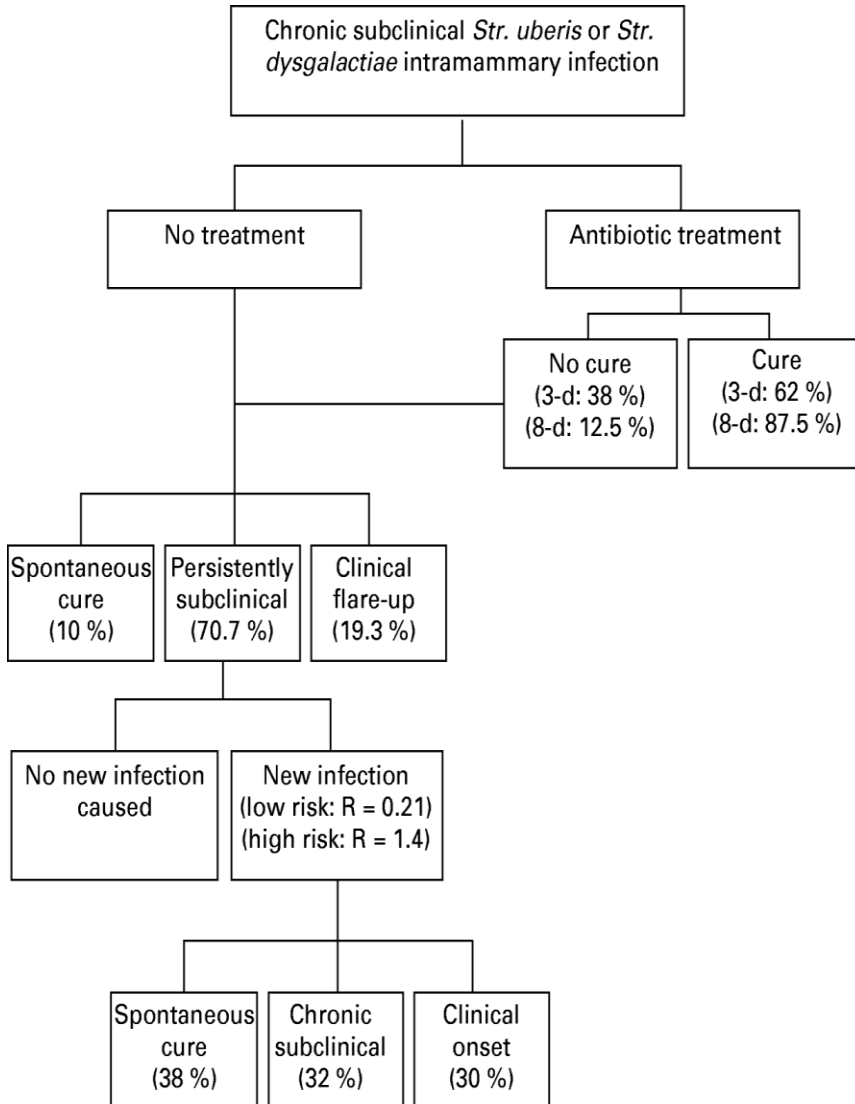
United States Department of Agriculture
National Institute of Food and Agriculture



Staph aureus



Treatment of Chronic Subclinical Intramammary Infections



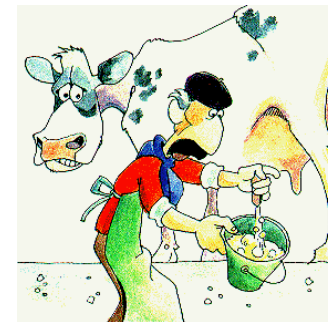
- Compared 3-day versus 8-day lactation treatment to no treatment

- 3 day-Net profit of €11.62 (\$15.13)

- 8 day-Net profit of €-21.83 (-\$28.42)



Conclusions



- Mastitis has a major impact on dairy farm profitability
- Impact varies by mastitis pathogen
- Most of the impact of mastitis is “invisible”
- We need to move to farm-specific estimates



United States Department of Agriculture
National Institute of Food and Agriculture



SQMI

Southeast Quality Milk Initiative

Any Questions?



THE UNIVERSITY OF
TENNESSEE **UT**
INSTITUTE of
AGRICULTURE

VirginiaTech
1872
Invent the Future

UK Ag
DAIRY

UNIVERSITY OF
KENTUCKY

USDA **NIFA**

United States Department of Agriculture
National Institute of Food and Agriculture

MISSISSIPPI
MAFES
AGRICULTURAL & FORESTRY
EXPERIMENT STATION

THE UNIVERSITY OF
GEORGIA

UF UNIVERSITY of
FLORIDA