SQMI
Southeast Quality Milk Initiative

Nutritional Factors Influencing Milk Quality

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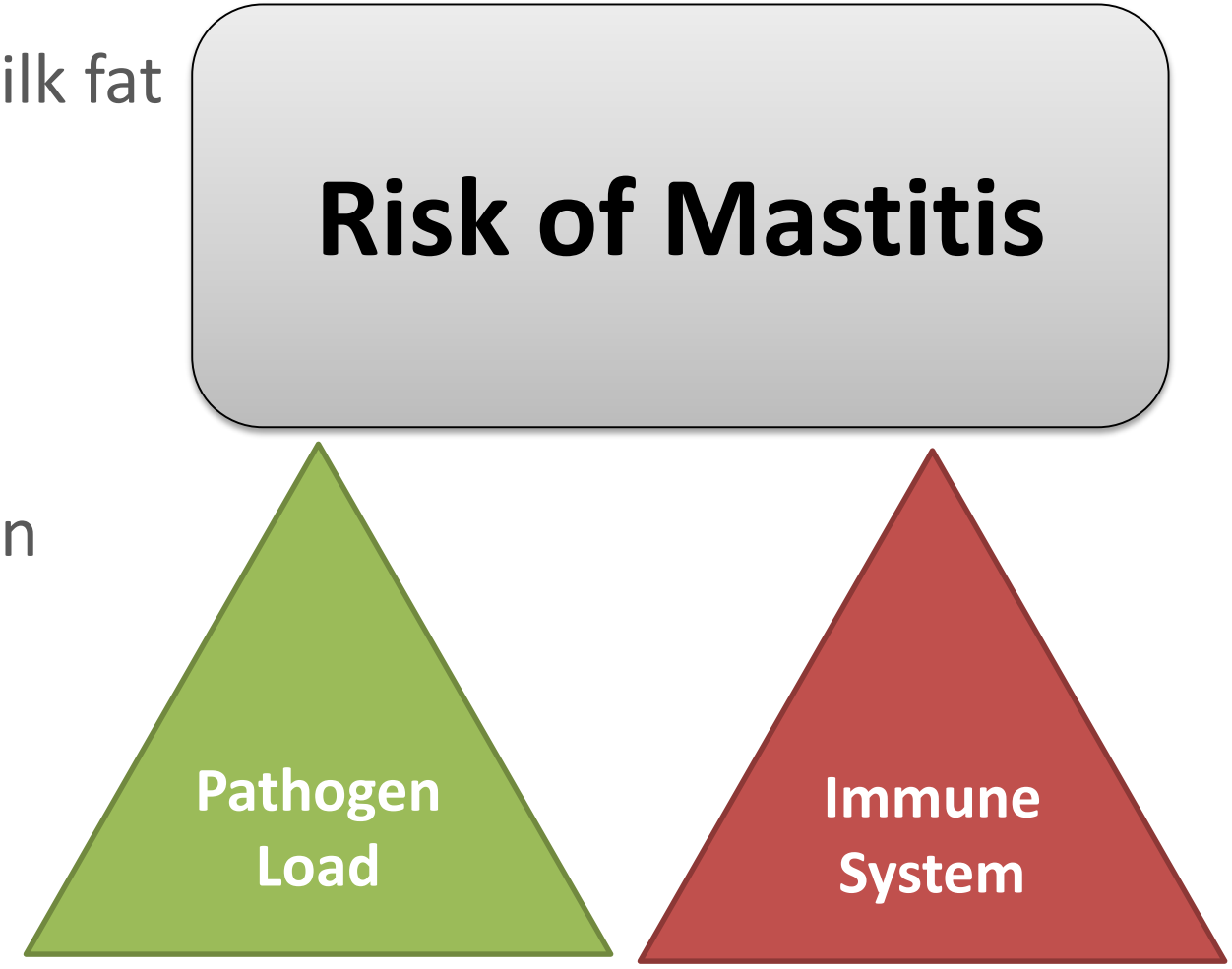
Is Nutrition Important?

- Yes!
- Proper nutrition is necessary to reduce incidence of:
  - Mastitis
  - Metabolic disorders
  - Milk loss

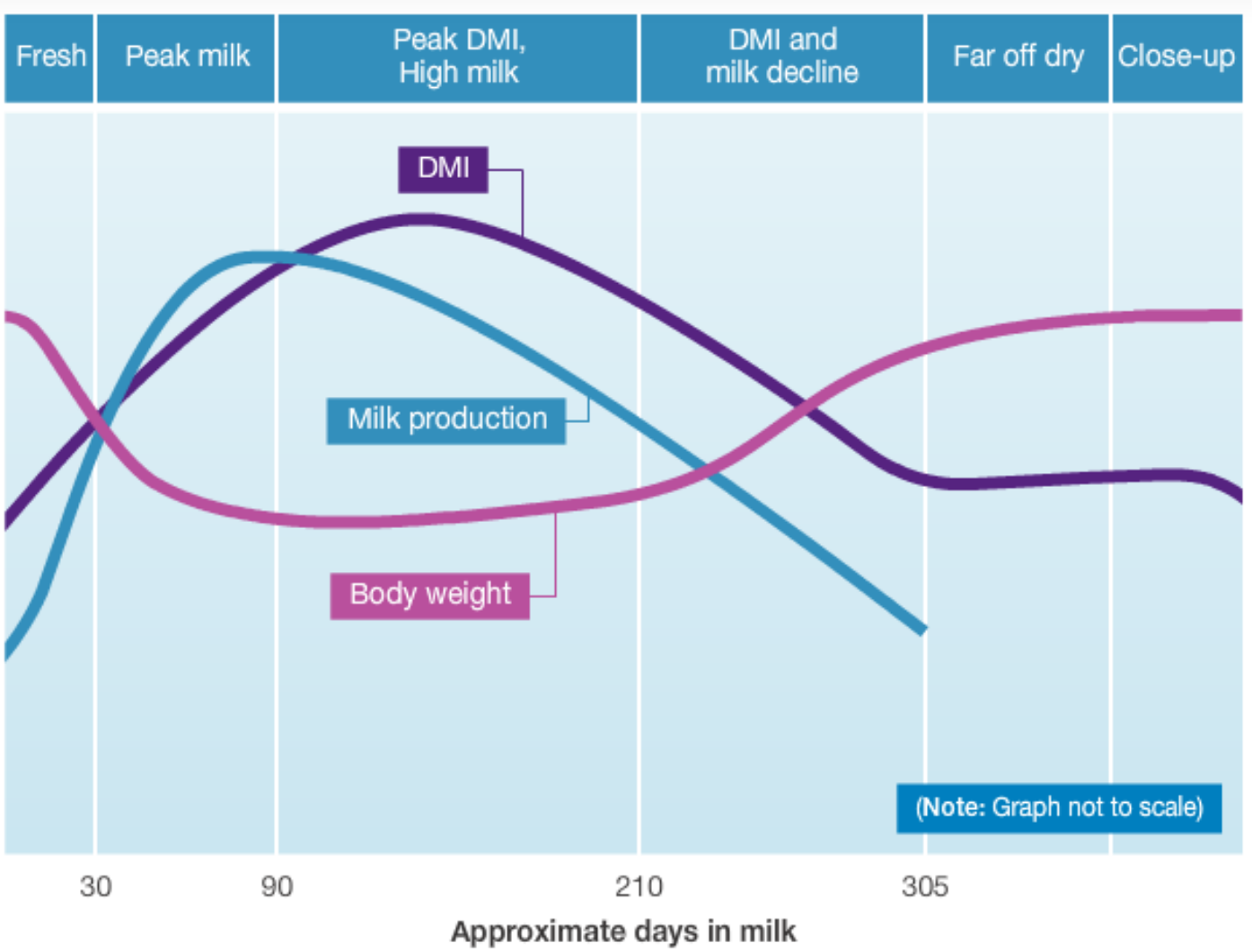
Nutrition and Milk Quality

- Milk composition affected by diet
  - Poor quality forages → lower milk fat
- Mastitis is dependent on:
  - Pathogen load at the teat
  - Cow's ability to fight off infection (immune system)

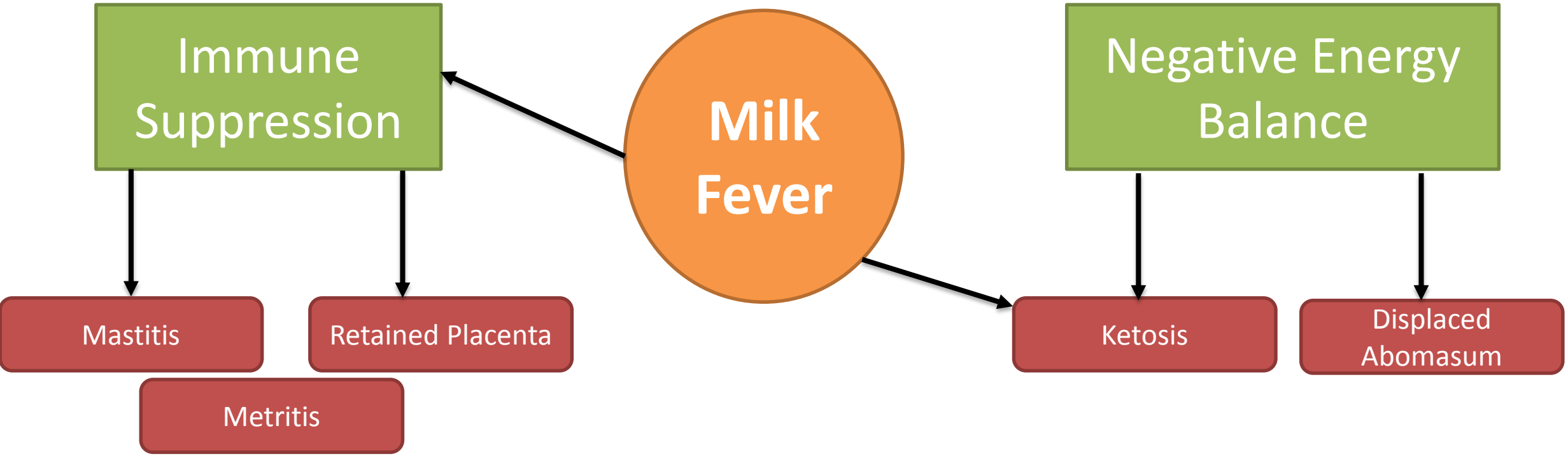


Transition Cows

- Transition cows = -21d to 21 DIM
- Very stressful time for the cow
- Sets the stage for a successful lactation cycle and future production

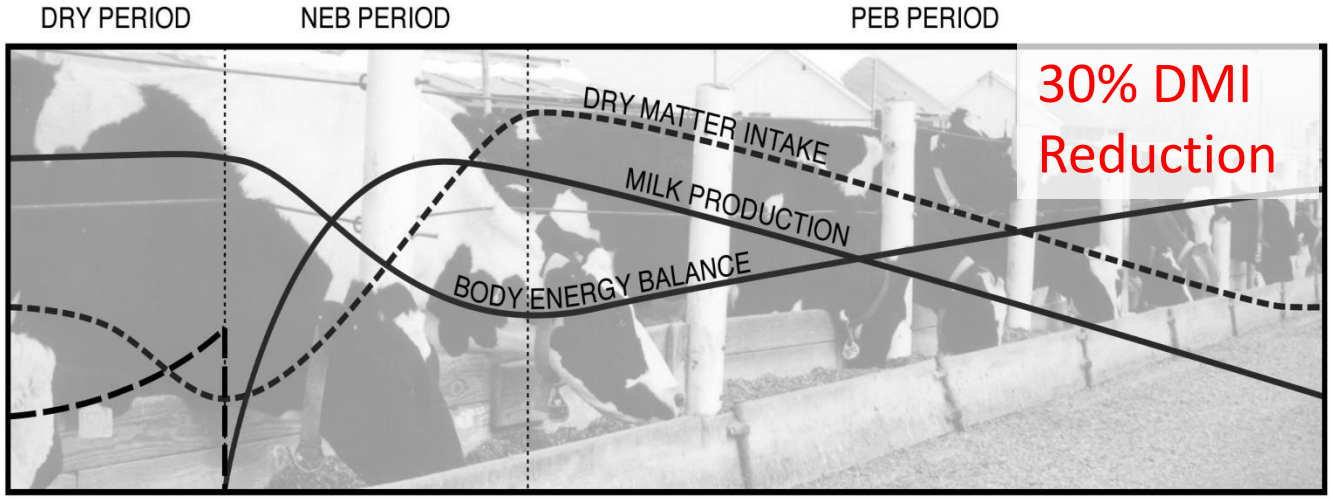


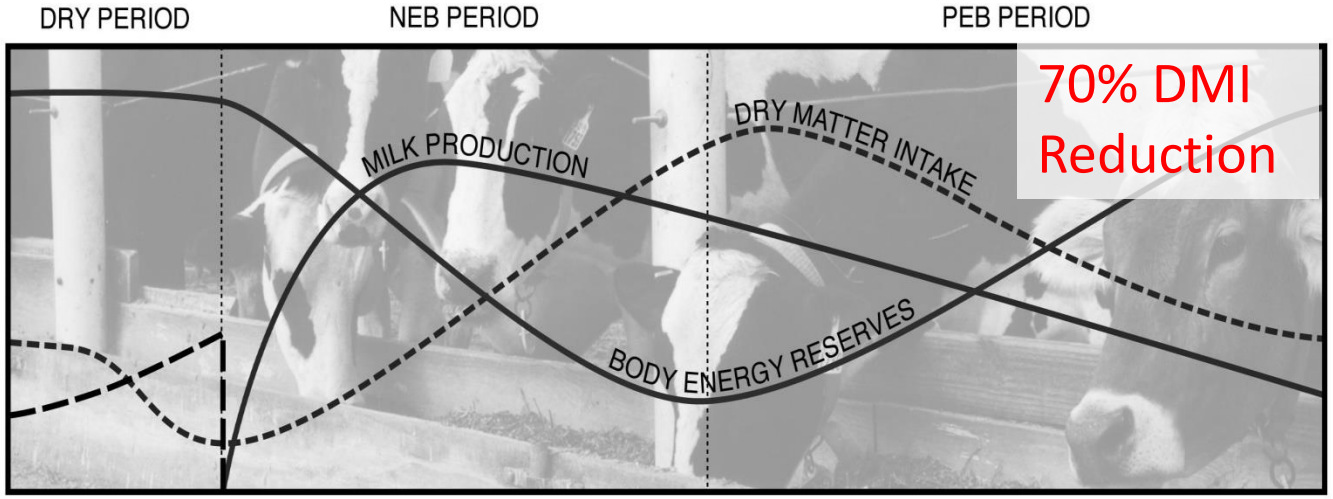
Nutrition and Milk Quality



Transition Cows

- Duration of NEB phase has direct impact on:
  - Peak milk production
  - Body Condition Score
  - Immune function





Negative Energy Balance

- Cows enter NEB:
  - Increased mobilization of fat to meet energy demands
    - Increased concentrations of ketone bodies
    - Increased concentrations of NEFAs
- Cows with ketosis have decreased:
  - Lymphocyte proliferation
  - IgM secretion
- Increased concentrations of BHBA:
  - Increased severity of induced mastitis

Nonnecke, et al., 1992; Kremer et al., 1993

Transition Cow Management

Keys to Success

‘The Key Play’list

- **Prevent metabolic disorders**
  - –good nutrition
  - –it starts in the dry period

Feed cows carbs!

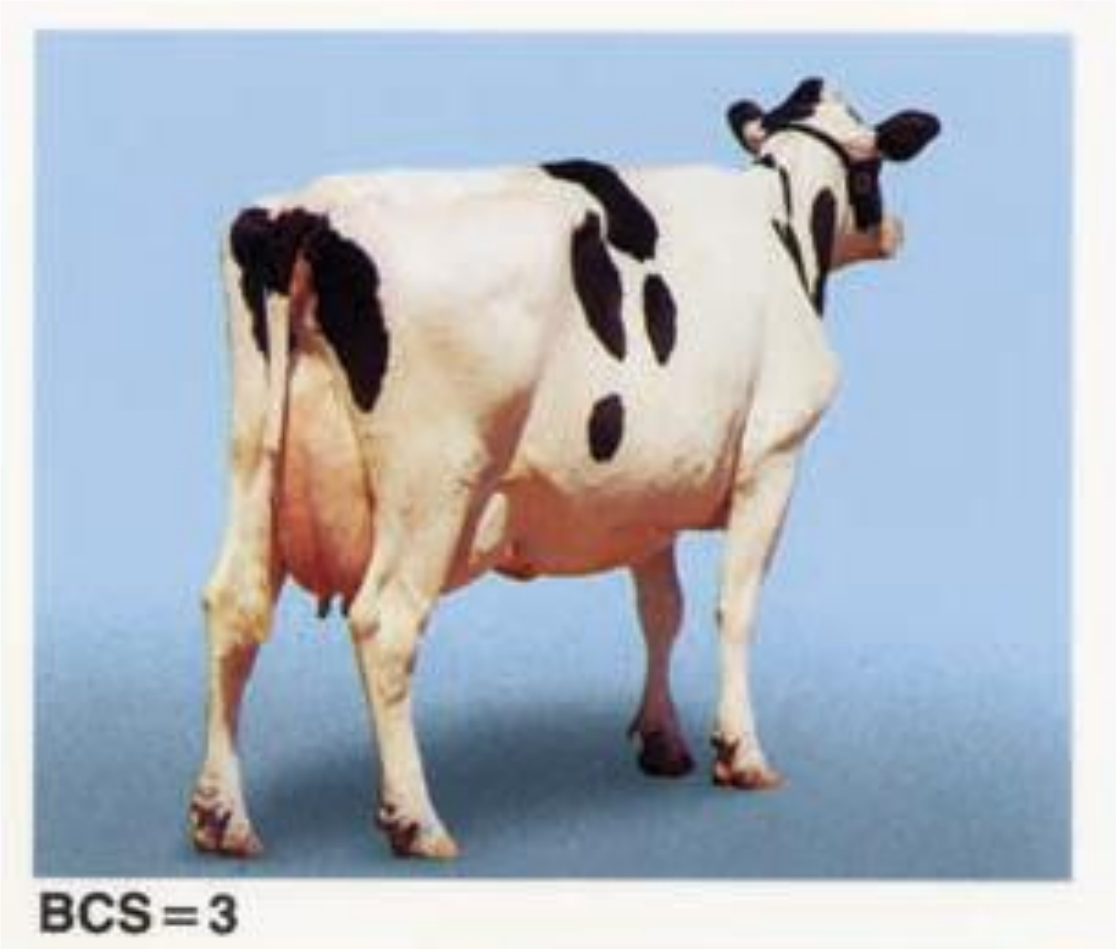
- Cows fed carbs v. fat responded differently
- High fat diets resulted in greater BHBA, SCC, and less milk yields

	Carbs	Mixed	Fats	P<
Energy Balance, kJ/kg MBW	−38^{a}	−103^{b}	−76^{ab}	0.01
Milk yield, kg/d	40.2	40.1	39.7	0.88
Milk fat, %	3.86^{a}	4.10^{ab}	4.16^{b}	<0.01
Milk Protein, %	3.26	3.26	3.26	0.99
BHBA, mmol/L	0.63^{a}	0.73^{b}	0.76^{b}	0.01
SCC x 10^{3}	3.60^{a}	3.67^{a}	4.25^{b}	0.01

Van Knegsal, et al., 2007

Dry Cows

- Cows decrease feed intake prior to calving
- Dry cows off at BCS = 3.0-3.5
- Feed to maintain BCS
  - BCS loss > 0.5 significantly increases risk for mastitis



Dry Cows

- Balance DCAD of diet to mobilize Ca prior to calving and prevent milk fever
- Provide clean calving environment to reduce pathogen load
- Reduce stocking rates

Lactating Cows

- Reduce stress in their environment
  - No overstocking
  - Clean bedding, comfortable cows
- Maximize feed intake after calving
  - Reduce duration of NEB
  - Increase # times fed/d or push feed up often (up to 5x/d)
  - Improve forage quality to maximize digestibility of ration
- Minimize risk for infectious diseases and pathogen load
  - Good vaccination protocols
  - Sanitary practices in parlor and other common areas

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Good nutrition is necessary for health cows

Despite what Dr. Bewley says….