



Individual Cow Calving Health Tool

What is this tool?

This is a **gap calculator** tool. It assesses the numbers of cows affected by common health problems at and after calving and their impact on herd reproductive performance.

Why use this tool?

Cows affected by health problems around the time of calving or in early lactation are at risk of reduced reproductive performance. Common health problems include difficult calvings, stillborn calves, retained foetal membranes, vaginal discharges, lameness and mastitis. This tool measures the number of cows affected by these health problems and identifies the gaps between this number in your herd and what would normally be expected.

These gaps are then used to estimate the likely effect on herd reproductive performance. If your herd has only a small number of cows affected, it is unlikely that they are reducing overall herd reproductive performance. However, if many cows are affected, you can expect overall herd reproductive performance to be substantially reduced. This tool enables you to assess the \$ benefits of improved herd reproductive performance that would be gained from reducing the number of cows affected by common health problems to normal levels.

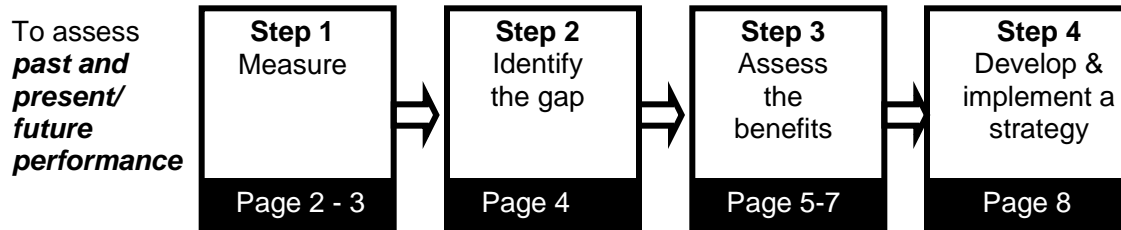
For more information, see *The InCalf Book*, Chapter 12: Cow health.


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How to use this tool

Work through this tool's four basic steps:



When you see this symbol  you need to fill in some information or do some calculations before continuing.

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Step 1) Measure

Keep records of cow health problems

Record all cases of the following problems.

Record the cow identity, and date and type of problem.

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Health problem

Definition

Assisted calving

Any assistance at all provided to deliver the calf

Stillborn calf

Calf born dead or dies within 24 hours of birth

Retained foetal membranes

Membranes visible externally on the day after calving

*Vaginal discharge**

Pus discharge from the vulva more than 14 days after calving

*Endometritis**

Metricheck positive 4 weeks before mating start date

**For the purposes of this tool, to reduce the risk of double counting, please only use one of vaginal discharge OR endometritis*

Lameness

Cow not bearing full weight on at least one leg and walking is affected between calving and first 6 weeks of mating

Mastitis

Any case requiring treatment during the first 6 weeks of the mating period

For each problem, calculate the percentage of cows affected

- Select a particular calving period.
- Count the total number of calvings in this period.
- For all cows calved in this period, count how many were affected by the problem.
 - Calculate the percentage of cows affected:
 - For lameness, only include those cases from calving to Week 6 of mating.
 - For mastitis, only include those cases occurring during the first 6 weeks mating.

Now go to Table 1 on page 3 to calculate the percentage of cows affected.



Table 1:

Cow health problem	No cows Affected (A)	Total no. cows calved to be included (B)	Percentage of cows affected (A÷B x 100 = C)
Assisted Calving	<input type="text"/>	<input type="text"/>	<input type="text"/> ÷ <input type="text"/> x 100 = <input type="text"/> %
Stillborn calf	<input type="text"/>	<input type="text"/>	<input type="text"/> ÷ <input type="text"/> x 100 = <input type="text"/> %
Retained foetal membranes	<input type="text"/>	<input type="text"/>	<input type="text"/> ÷ <input type="text"/> x 100 = <input type="text"/> %
Vaginal discharge (> 2 weeks after calving)	<input type="text"/>	<input type="text"/>	<input type="text"/> ÷ <input type="text"/> x 100 = <input type="text"/> %
OR*			
Endometritis	<input type="text"/>	<input type="text"/>	<input type="text"/> ÷ <input type="text"/> x 100 = <input type="text"/> %
Lameness (Calving to Week 6 mating)	<input type="text"/>	<input type="text"/>	<input type="text"/> ÷ <input type="text"/> x 100 = <input type="text"/> %
Mastitis (First 6 weeks mating)	<input type="text"/>	<input type="text"/>	<input type="text"/> ÷ <input type="text"/> x 100 = <input type="text"/> %

(!) Ensure that all cows affected by health problems receive the appropriate immediate treatment (*The InCalf Book*, pages 94-95).

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Step 2) Identify the gap

Enter the percentages of cows affected for your herd calculated in Table 1 in the table below. Calculate the gap between these percentages and those normally expected for common cow health problems as indicated in column D.

Cow health problem	Percentage of cows affected		Gap(G) (C minus D)
	Your herd (C) (from Table 1)	Normal (D)	
Assisted calving	<input type="text"/> %	3 %	= <input type="text"/> %
Stillborn calf	<input type="text"/> %	4 %	= <input type="text"/> %
Retained foetal membranes	<input type="text"/> %	2 %	= <input type="text"/> %
Vaginal discharge	<input type="text"/> %	1 %	= <input type="text"/> %
OR*			
Endometritis	<input type="text"/> %	7 %	= <input type="text"/> %
Lameness	<input type="text"/> %	5 %	= <input type="text"/> %
Mastitis	<input type="text"/> %	5 %	= <input type="text"/> %

(I) Note: If the percentage for a particular cow health problem in your herd is *lower* (i.e. better) than normal, the gap (G) will be a negative percentage. If so, record as '0' in the table above. Your herd's performance for this cow health problem is good and there is no gap to be closed.

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Step 3) Assess the benefits

Closing the health problem gaps can increase herd reproductive performance.

Other benefits include reduced labour requirements, simplified management, possible increased milk production and income in some cases, and improved animal welfare.

Part 1: Estimate the likely effect of closing the gaps on herd reproductive performance

Record the gaps (G) calculated in Table 2 into Table 3 (below) and Table 4 (over page). Calculate the likely effects of closing each of these gaps on herd reproductive performance. Then add all these up to estimate the likely increase in 6-week in-calf rate and likely decrease in not-in-calf rate if *all* health problem gaps were closed.

Table 3: Likely effect on 6-week in-calf rate.

Cow health problem	Gap (G) (from Table 2)			Likely increase in 6-week in-calf rate from closing this
Assisted calving	<input type="text"/>	% x 0.15	=	<input type="text"/> %
Stillborn calf (non-induced cows only)	<input type="text"/>	% x 0.12	=	<input type="text"/> %
Retained foetal membranes	<input type="text"/>	% x 0.20	=	<input type="text"/> %
Vaginal discharge	<input type="text"/>	% x 0.18	=	<input type="text"/> %
OR*				
Endometritis	<input type="text"/>	% x 0.09	=	<input type="text"/> %
Lameness	<input type="text"/>	% x 0.06	=	<input type="text"/> %
Mastitis	<input type="text"/>	% x 0.05	=	<input type="text"/> %
Total: (The likely increase in 6-week in-calf rate if all health problem gaps were closed)				<input type="text"/> % (H)

Table 4: Likely effect on not-in-calf rate

Cow health problem	Gap (G) (from Table 2)	Likely decrease in not-in-calf rate from closing this gap
Assisted calving	<input type="text"/> % x 0.08	= <input type="text"/> %
Stillborn calf (non-induced cows only)	<input type="text"/> % x 0.05	= <input type="text"/> %
Retained foetal membranes	<input type="text"/> % x 0.16	= <input type="text"/> %
Vaginal discharge	<input type="text"/> % x 0.05	= <input type="text"/> %
OR*		
Endometritis	<input type="text"/> % x 0.05	= <input type="text"/> %
Lameness	<input type="text"/> % x 0.03	= <input type="text"/> %
Total: (The likely decrease in not-in-calf rate if all health problem gaps were closed)		<input type="text"/> % (I)

(I) Estimating likely changes from closing the gaps

The likely changes in reproductive performance estimated in Tables 3 and 4 are based on the effect of the problem among affected cows. For example, the effect of assisted calving on 6-week in-calf rate is set at 15 divided by 100 (or 15%). In other words, we assume that cows affected by assisted calving have 6-week in-calf rates 15% lower than unaffected cows. This is the effect on 6-week in-calf rate among affected cows. To then calculate the effect for the *whole herd*, multiply the effect on 6-week in-calf rate among affected cows by the change in % of cows affected in the herd.

For example, if 10% fewer cows were affected by assisted calving (the gap), we would expect herd 6-week in-calf rate to increase by $10\% \times 15\% = 1.5\%$ (i.e. the gap times 15 divided by 100 – see above). So, we would expect herd 6-week in-calf rate to increase by 1.5% if we closed the assisted calving gap. If gaps are closed for a number of disorders, we can obtain the combined effect on 6-week in-calf rate by adding up the individual effects.

(!) These likely improvements in herd reproductive performance indicate what may occur if all health problem gaps were closed by reducing percentages of cows affected by health problems to normal levels. Follow-up treatment strategies for affected cows may also increase herd reproductive performance, provided treatments are effective (see InCalf Book page 136).



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(!) Note: As treatments are rarely 100% effective, follow-up treatment strategies for affected cows may not increase herd reproductive performance by as much as indicated here. However, prevention will achieve these benefits. In some situations, closing the health problem gaps may improve reproductive performance by more than calculated here, e.g. if most lameness cases were severe rather than mild. In addition to this, as well as preventing problems that can be seen, other unseen (sub-clinical) problems may also be prevented. In other situations, closing the health problem gaps may improve reproductive performance by less than calculated here. This can occur if many cows are only mildly affected, or if follow-up treatment of affected cows as currently used is effective.

Part 2: Determine the likely economic benefits of improved herd reproductive performance from closing the gaps*

1. What is closing your 6-week in-calf rate 'gap' worth?

Gap (H)..... X *\$4 X cows in herd = \$ **(J)**

* This economic multiplier was estimated through modeling assuming a \$5.50 per Kg MS payout. The financial consequences of empty cows were excluded from this estimate.

2. What is closing your not-in-calf rate 'gap' worth?

Gap (I)..... X **\$10 X cows in herd = \$ **(K)**

** This economic multiplier assumes a \$1000 value differential between an empty and in-calf cow.

3. What is closing the individual cow health gap worth overall?

Total operating profit (J) + (K) + = \$ per year

(!) Note: This \$ figure is a likely gross benefit, i.e. it does not include all cost increases associated with the changes to close the gaps. These increases will depend on the particular farm strategy chosen to close the gaps after exploring options. See the next step.

(!) Abortions

Abortion during early pregnancy (embryonic loss) occurs naturally at low levels. Seek advice if the abortion rate exceeds 6% following early pregnancy testing or exceeds 2% following late pregnancy testing.

Step 4) Develop & implement a strategy

Work closely with your adviser to develop your own personal farm strategy to achieve these benefits.



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Key issues to consider:

- Follow-up treatment of affected cows (*The InCalf Book*, page 136).
- Consideration of strategies for prevention (*The InCalf Book*, pages 133-134) and implementing the appropriate strategies. Professional advice may be desirable to plan prevention.
- Other benefits apart from increased reproductive performance that may also be gained. These include reduced labour requirement, simplified management, possible increased milk production and income in some cases, and improved animal welfare.



For further information on minimising abortions, see *The InCalf Book*, pages 100-101

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