HEALTH 4 WEALTH

Development of standards for ante/post-mortem processor data collection and reporting for the pork industry

Final Report
APL Project 2017/004

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Executive Summary

The Department of Agriculture and Water Resources (DAWR) maintains a de-identified database on total carcase condemnations of pigs for verification and market access purposes, with data currently entered separately to that of the abattoir. However, data on partial and offal condemnations are not being captured by processors in a consolidated, standardised and systematic manner and this is the area of greater product and financial loss to both producers and processors.

Whilst some establishments may have recording systems in place, systems used (e.g. manual or electronic), the capability of personnel responsible for data collection on the slaughter floor and feedback of information to producers varies between establishments. The reporting of disease-related partial and total condemnation data to producers by processors may also occur infrequently and detail provided varies considerably. It is therefore difficult to utilise this information to support industry initiatives such as reforms in carcase inspection, verification and certification procedures in order to improve animal health status and identify/support alternative risk management procedures. The lack of equivalence in the data collected between establishments also presents difficulties for producers to implement changes to on-farm management strategies and practices in order to address animal health issues identified during processing (particularly when animals are sent to different processors for slaughter).

The project '*Enhancing supply chain profitability through reporting and utilisation of peri-mortem information*' ('The Health4Wealth Project') aims to develop a standardised approach to data collection on disease-related carcase and offal condemnations and a nationally agreed, consistent feedback system to producers. It is envisaged that the new system will allow producers to monitor disease prevalence in their livestock and make informed decisions to maximise financial yield outcomes. Further, modelling indicates financial benefits would be realised by the processing sector with reduced wastage (APL 2015/2209). This study falls under the Health4Wealth Project and focusses on developing a core list of disease conditions and engaging with stakeholders on the topic of the introduction of a national, standardised feedback system for the Australian pork industry.

The Health4Wealth Pork Industry Stakeholder workshop was held in Adelaide on the 7th and 8th of March. The workshop was facilitated by Dr Andrew Pointon and was attended by thirty industry stakeholders representing producers, export processors, state and federal government, Australian Veterinary Association's Australian Pig Veterinarians (APV) group, Animal Health Australia and Australian Pork Limited.

Two international speakers, Dr Derk Oorburg (Group QA Manager) from VION Foods in the Netherlands and Dr Eric Neumman from Epi-Insight in New Zealand, shared their experiences with pig health feedback systems. Derk provided an overview of the VION Foods company structure, before outlining the animal health data that is collected in VION plants in the Netherlands, what type of information is reported back to producers and how, and outlined the next steps and lessons learned. VION Foods view their animal health feedback system as vital for strengthening company relationships to ensure slaughter numbers processed by VION and building their reputation and responsibility for food safety control, animal welfare, biosecurity and market access – "producing a Dutch pig fit for a world market". Derk covered sampling procedures and ante-mortem/post-mortem data collection, showed videos of data recording on touch screen stations and visual only inspection by meat inspectors. Derk gave examples of the conditions reported back to the farmer, as well as additional data which is of importance to the processor to improve slaughter management and process

control. In summary, Derk's presentation concluded that the collected information has to be relevant and data collection needs to be easy, objective and uniform in order to deliver higher efficiency, yield improvements for the farmer and once collected, the data is used several times so all stakeholders benefit.

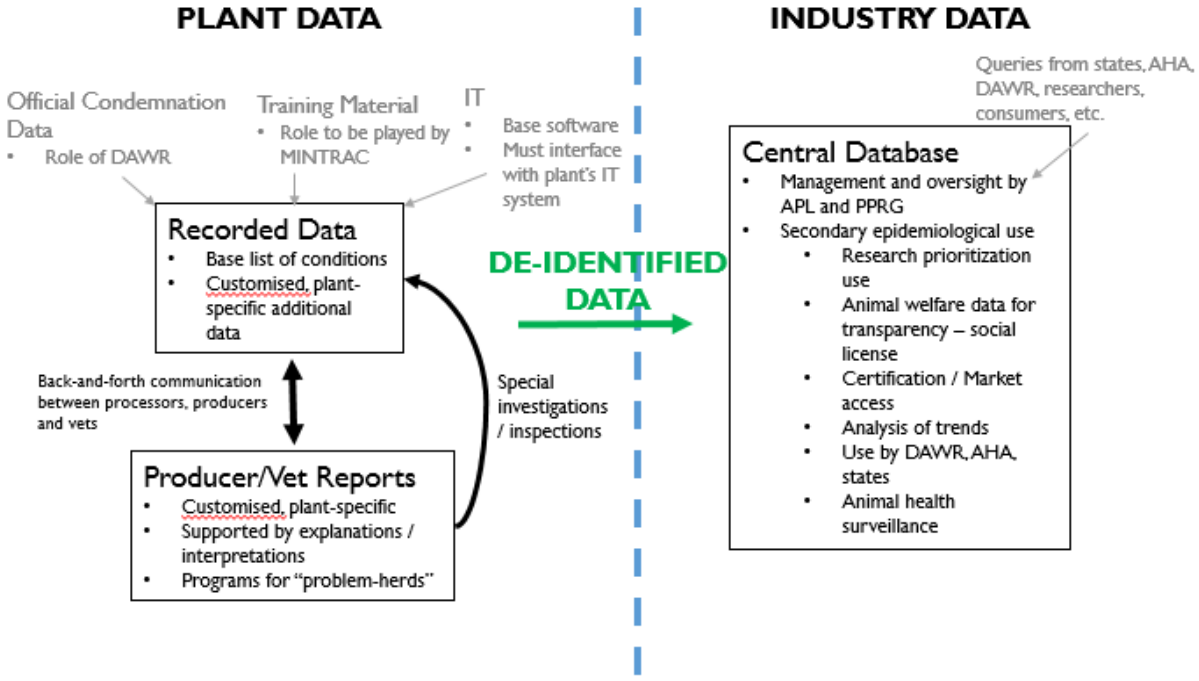
PigCheck is New Zealand's abattoir disease monitoring system in the pig industry. It is a user-pays system which became fully operational across the country in 2000. Eric outlined how pig health and quality data are recorded on an animal-level basis using touch screens and also the list of conditions that are currently recorded and reported. Even within New Zealand, there is difficulty in accessing historical and collated PigCheck data for specific investigation, but it has been used to estimate national prevalence levels for different diseases and health conditions. Eric highlighted the issue related to perceived variation between inspectors/plants, which was also voiced by workshop participants regarding variation in meat inspectors' judgements and training in Australia.

There was agreement and support from all workshop participants for a standardised language across all establishments and for use by the broader industry, such as pig production veterinarians. An agreed list of conditions and impact or consequence data was developed as the minimum base data for collection in all seven pork export establishments (given below).

Syndromic Condition	**Impact or Consequence Data**
Abscess	Leg condemned
Anaemia	Forequarter / Hindquarter condemned
Arthritis	Side condemned
Ascarids	Backbone removed
Bruising	Liver condemned
Colitis	Carcase skinned – partial or whole
Contamination	Ribs removed
Dermatitis	Pleura stripped
Erysipelas	Pluck condemned
Fever	Intestines condemned
Ilietis	Overfull guts (contamination)
Melanoma	Total carcase condemnation
Nephritis	
Pericarditis	
Peritonitis	
Pleurisy	
Pneumonia	
Ante mortem (emergency kill reason / tail bite / hernia / orchitis)	

There was also collective agreement from industry stakeholders on a proposed model for the flow of data collected under a feedback system within the Australian pork industry (diagrammatically depicted below).

- Proposed Australian Pork Industry Model



Other discussion points raised were:

- Consistent training of meat inspectors is crucial in order to produce data that is consistent, trusted and integral.
- Standardisation of the language is key; secondary data use is not seen as such a high priority for processors.
- "Keep the system simple."
- The current focus is the export abattoirs and all effort will be made to get domestics on board.
- Abattoirs own the data collected by personnel in their plant.
- De-identified minimum base model data can be used for industry defence purposes.
- Processors with their producers will drive uptake and adoption.
- Explanatory fact-sheets with easy-to-understand explanations and descriptors (e.g. what is meant by condition X, management advice/considerations and options for solutions) needs to be developed for each condition, in consultation with pig veterinarians, for use by producers.
- A capability assessment of software/hardware used across plants to inform investment by Health4Wealth would be useful.
- The list of syndromic and impact data was consolidated with feedback from all the stakeholders in the workshop, removing all the severity categories (see table below).
- APL's Pork Processor Referral Group will play an important role in oversight of the collated, de-identified industry data.
- Storage location of the de-identified industry data.

The workshop participants also provided input into the next steps and direction for the Health4Wealth program for the pork industry which included pilot trials, software development and training protocols

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1. Background to Research

The operations of export accredited pork processing establishments are regulated by the Australian Government through the Department of Agriculture and Water Resources (DAWR). As part of the Pork Australian Meat Export Inspection System (Pork AEMIS), DAWR maintains a de-identified database on total carcase condemnations of pigs for verification and market access purposes, with data currently entered separately to that of the abattoir by the on-plant veterinarian (OPV). However, data on partial and offal condemnations are not captured by processors in a consolidated, standardised and systematic manner and this is the area of greater product and financial loss to both producers and processors.

Whilst some establishments may have recording systems in place, systems used (e.g. manual or electronic), the capability of personnel responsible for data collection on the slaughter floor and feedback of information to producers varies between establishments. The reporting of disease-related partial and total condemnation data to producers by processors may also occur infrequently and its detail varies considerably between processors. It is therefore difficult to utilise this information to support industry initiatives such as reforms in carcase inspection, verification and certification procedures in order to improve animal health status and identify/support alternative risk management procedures. The lack of equivalence in the data collected between establishments also presents difficulties for producers to implement changes to on-farm management strategies in order to address animal health issues identified both prior to and during processing.

The project '*Enhancing supply chain profitability through reporting and utilisation of peri-mortem information*' (hereby known as 'The Health4Wealth Project') aims to develop a standardised approach to data collection on disease-related carcase and offal condemnations and a nationally agreed, consistent feedback system to producers. It is envisaged that the new system will allow producers to monitor disease prevalence in their livestock and make informed decisions to maximise financial yield outcomes. Further, modelling indicates financial benefits would be realised by the processing sector with reduced wastage. A standardised approach will also provide the data to support on-going risk assessment of inspection procedures.

The Health4Wealth Project is one of the seventeen projects funded by the Commonwealth Government under Round 2 of the Rural Research and Development for Profit Program. The objectives of the Health4Wealth Project are to:

- Develop a business case for a peri-mortem data capture and reporting system that meets the needs of stakeholders across the beef, goatmeat, sheepmeat and pork supply chains.
- Develop standards and software that can be used to collect and consistently report disease-related carcase and offal condemnations (total and partial) during ante- and post-mortem inspection.
- Conduct validation studies to identify challenges or barriers to implementation and recommend solutions prior to rollout of the national system.
- Implement a national extension and adoption strategy to allow standardised data collection and reporting systems to be integrated into Australia's beef, goatmeat, sheepmeat and pork supply chains.
- Provide data to support on-going risk assessments of inspection procedures.

This project falls under the Health4Wealth Project and focusses on developing a core list of disease conditions and engaging with stakeholders on the topic of the introduction of a national, standardised feedback system for the Australian pork industry.

2. Objectives of the Research Project

The project objectives were to:

1. Develop a core abattoir data feedback language.
2. Update stakeholder response and impediments to the introduction of a national feedback system.

3. Introductory Technical Information

Historically, the type and scope of animal health feedback that pork producers receive for the animals they sell for slaughter is relatively limited. As it is at the processor's discretion, feedback ranges from minimal (e.g. condemn certificates) to quite extensive (e.g. prevalence of pleurisy). Partial condemns, often indicative of herd health issues, are generally not reported. The pork industry identified this as a data gap and APL has recognised this area as a research priority since 2012.

A workshop, conducted in 2012/2013 as part of APL project 2012/2400, included producers, processors, consultant veterinarians and veterinary authorities (state and federal) and concluded that a uniform national recording and feedback system for abattoir inspection findings held significant benefits for all stakeholders. These included provided ongoing herd health data which is of great potential value to the producer and the consultant veterinarian, reducing the number of sub-standard slaughter animals (and the processing cost associated with that) and enhancing the confidence of regulators and overseas authorities in Pork AEMIS.

In APL project 2013/2417, further consultations were held with state veterinary authorities and processors to more accurately capture their current system, assess their degree of support for a change and identify concerns they felt needed addressing that would impede implementation. State and Commonwealth Veterinary Authorities, faced with dwindling surveillance resources and increasingly being challenged by overseas authorities to back up their certification claims with data, showed a great deal of interest in the development of a National Abattoir Database, and offered their support. Processors recognised the value of such a system, both to themselves and the Australian industry more broadly. Overall, the processors gave in-principle support but required a robust cost-benefit assessment.

Hudson and Hamilton (2016) (APL project 2015/2209) used operational and financial data supplied by the seven export pig processors (representing approx. 80 to 85% of the Australian pig kill) for four months (over a twelve month period to capture seasonality) to calculate the true cost associated with abattoir interventions to deal with sub-standard pigs (lost production, overtime, product loss, etc). In total, the potential gains for processors and producers was conservatively estimated at $5.70M annually, which does not include the production gains associated with the improved growth performance of affected pigs. The project identified a number of key impediments to establishing an effective standardised data collection system:

- The inconsistency in the format in which data was recorded by processors;
- The lack of consistency in the terminology applied to various causes/defects and carcase components which required intervention;
- The inconsistency in the scope and frequency of intervention information recorded along the slaughter chain.

For example, Figure 1 shows the stark difference in the establishment recorded data on the major carcases defects leading to slaughter floor interventions, collected for the same 4 month time period. One establishment collected data on seven conditions, while at the other extreme, another establishment collected data on 42 conditions (Table 1). A reason for the establishment differences in the conditions for which data are being collected is the lack of a standardised recording system and variation in recording language and defect definition.

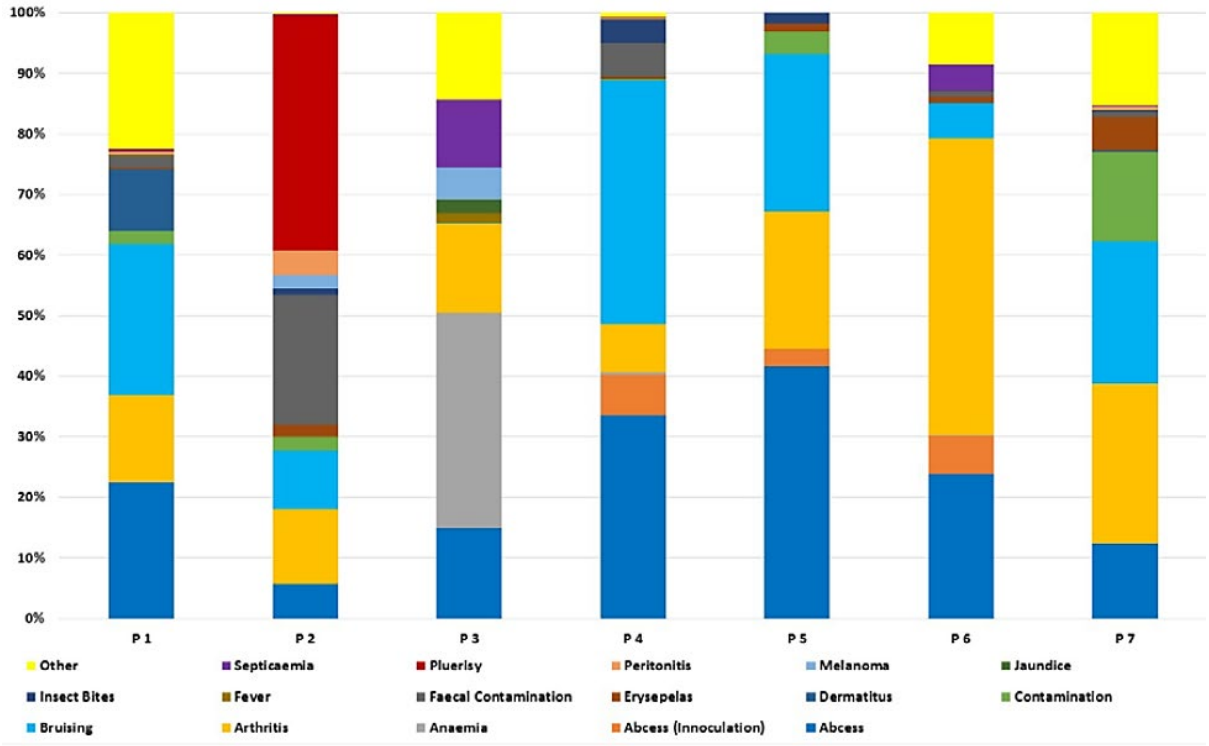

Figure 1: Variation between the seven pork export establishments for recorded major carcase defects leading to intervention (full or partial condemn) over same four months.

(Source: Hudson and Hamilton, 2016; APL project 2015/2209)

Table 1: The range of conditions recorded by the seven pork export establishments over the same four months.

Cause or Defect Present on Carcass x Processor						
Plant 1	**Plant 2**	**Plant 3**	**Plant 4**	**Plant 5**	**Plant 6**	**Plant 7**
Abscess	Abscess	Abscess	Abscess	Abscess	Abscess	Abscess
Adhesion	Abscess Multiple	Anaemia	Anaemia	Arthritis	Anaemia	Abscess Multiple
Anaemia	Arthritis	Arthritis	Arthritis	Bruising	Arthritis	Anaemia
Arthritis	Bile Contamination	Bruising	Broken Bone	Erysipelas	Bruised	Arthritis
Bile Contamination	Bruising	Fever	Bruising	Gross Contamination	Cancer	Broken Pelvis
Bruising	Erysipelas	Jaundice	Contamination	Inoculation Damage	Ecchymosis	Broken Ribs
Cancer	Faecal Contamination	Melanoma	Emaciation	Insect Bites	Emaciation	Bruising
Contamination	Fever	Septicaemia	Erysipelas		Erysipelas	Cancer
Cooked	Fight Marks	Other	Inoculation Abscess		Folliculitis	Contamination
DCARC	Insect Bites		Insect bites		Fever	Dermatitis
Dermatitis	Major Pleurisy		Peritonitis		Faeces	Erysipelas
Ecchymosis	Mange		Phimosis		Gangrene	Faecal Contamination
Emaciation	Melanoma		Pleurisy		Granuloma	Gangrene
Entertrytis	Minor Pleurisy		Pyaemia		Jaundice	Jaundice Icterus
Erysipelas	Peritonitis		Septicaemia		Melanoma	Mosquito Bites
Faeces Contamination	Septicaemia		Toxaemia		Pyaemia	Peritonitis
Fever					Septicaemia	Pyaemia
Fractures						Septicaemia
GC						Insect Bites
In-bleed						Peritonitis
Jaundice						Polyarthritis
Milk						Pyaemia
Multi Abscess						Pyrexia (Fever)
Oedema						Septic Pneumonia
Oil						Septicaemia
Other						
Peritonitis						
Pleurisy						
Polyarthritis						
PSE						
Scar						
Sebaceous Cyst						
Semen						
Septicaemia						
Septic W						
Skinless						
SPNEUM						
Tail Bite						
Tumour						
Uraemia						
Urine						

(Source: Hudson and Hamilton, 2016; APL 2015:2209)

During the 2017 MINTRAC Meat Inspection and Quality Assurance Managers Network regional meetings and Conference, QA staff from pork establishments were surveyed as to their opinion on the importance of various diseases. QA staff were given a virtual $1,000 to allocate to various diseases, with the objective of investing in and spending money to reduce the diseases considered to have most importance and effect. The $1,000 could be split into smaller amounts, to distribute funds more widely if desired. The results of this exercise run by MINTRAC and Dr Joan Lloyd are shown in Table 2. The top three conditions for pigs were arthritis, pleurisy and abscesses.

Table 2: Conditions and the prioritised virtual investment identified by QA staff at the 2017 MINTRAC MI&QA meetings.

Condition	**Total**
Abscess	$2,000
Anaemia	$100
Arthritis	$3,400
Bile contamination	$300
Bruising	$600
Dermatitis	$100
Erysipelas	$1,400
Septicaemia	$250
Melanoma	$800
Peritonitis	$0
Pleurisy	$5,800
Other	$0
Total	**$14,750**

This project utilises and builds on the results of this previous research to develop, in collaboration with processors and other stakeholders, a common, more useful language to facilitate prompt and accurate abattoir feedback of reasons resulting in partial carcase and/or offal condemnation to assist products to improve their productivity through improved herd health surveillance.

4. Project Methodology

4.1 Processor agreement

In late 2017, Dr David Hamilton spoke with representatives from the seven export pork establishments and gained their unanimous, in-principle support for progressing towards an agreed, standardised data collection list of conditions and processing information. The agreement from processors continued at the Pork Processors Referral Group (PPRG) meeting in Melbourne on the 28th of November 2017, where Dr David Hamilton and Jessica Jolley presented an update on the Health4Wealth project and this project (APL 2017/004).

4.2 Standardising conditions/data for collection

From the preceding work (as outlined in Introductory Technical Information), there are two different but related streams of information that can be collected in an abattoir surveillance system – syndromic or impact/consequence data.

In the letters sent to processors, producers, veterinarians, Australian Pig Vets, state Chief Veterinary Officers, federal regulators and Animal Health Australia (AHA) before the Health4Wealth Pork Industry Stakeholder Workshop, feedback on the standardised list was requested and received from industry stakeholders.

4.3 Industry stakeholder workshop

To facilitate stakeholder response to the agreed common language and data requirements, as well as a national system, an industry stakeholder workshop was held in Adelaide on the 7th and 8th of March 2018. The workshop was facilitated by Dr Andrew Pointon and a total of 30 people participated, including export processors, producers, APV group veterinarians, state and federal regulators and representatives from AHA and APL:

- Derk Oorburg (Vion Foods, Netherlands)
- Eric Neumman (Epi-Insight, New Zealand)
- Laurie Tobin - processor (Rivalea)
- Regina Fogarty - APV(Rivalea, secretary of Australian Pig Veterinarians group)
- Trevor Moore – processor (NCMC Booyong)
- Mark Jolley - processor (NCMC Booyong)
- Dick de Jonge – processor (Diamond Valley Pork)
- Karen Rykers – processor (Diamond Valley Pork)
- Darryl D'Souza – processor (Swickers)
- Michael Bayer - processor (Big River Pork)
- Darren Bloomfield – processor (Big River Pork)
- Greg Richter – processor (Primo Smallgoods)
- Ingunn Stensland – processor (Linley Valley Pork)
- Vanessa Morris – APV (Portec)
- Sarah Medhurst – APV (Sunpork Farms)
- Greg Marr - APV
- Jeff Braun – producer (Myora)
- Neil Ferguson – producer (Westpork)
- Tim Kingma – producer (GunPork)

- Robert Barwell – Animal Health Australia
- Jack Reddin – on-plant vet (Department of Agriculture and Water Resources)
- Samantha Allan – regulator (Department of Agriculture and Water Resources)
- Celia Dickason – regulator (Primary Industries and Regions, South Australia)
- Nina Kung – regulator (Queensland Department of Agriculture and Fisheries)
- Tony Abel (Australian Pork Limited)
- Heather Channon (Australian Pork Limited)
- Andrew Pointon (facilitator)
- Alexander Howard (SARDI)
- David Hamilton (SARDI)
- Jessica Jolley (SARDI)

Two international speakers, Dr Derk Oorburg (Group QA Manager) from VION Foods in the Netherlands and Dr Eric Neumman from Epi-Insight in New Zealand, shared their experiences with pig health feedback systems. Derk provided an overview of the VION Foods company structure, before outlining the animal health data that is collected in the Netherlands, what type of information is reported back to producers and how, and outlined the next steps and lessons learned. VION Foods view their animal health feedback system as vital for strengthening company relationships to ensure slaughter numbers processed by VION and building their reputation and responsibility for food safety control, animal welfare, biosecurity and market access – "producing a Dutch pig fit for a world market". Derk covered sampling procedures and ante-mortem/post-mortem data collection, showing videos of data recording on touch screen stations and visual only inspection by meat inspectors. Derk gave examples of the conditions reported back to the farmer, as well as additional data which is of importance to the processor to improve slaughter management and process control. In summary, Derk's presentation concluded that the collected information has to be relevant and data collection needs to be easy, objective and uniform in order to deliver higher efficiency, yield improvements for the farmer and once collected, the data is used several times so all stakeholders benefit.

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5. Project Outputs

5.1 Agreed data feedback language

There was agreement and support from all workshop participants for a standardised language across all establishments and for use by the broader industry, such as pig veterinarians. An agreed list of conditions and impact or consequence data was developed as the minimum base data for collection in all seven pork export establishments (Table 3).

Table 3: Agreed list of syndromic conditions and impact or consequence data for collection in all pork export establishments.

Syndromic Condition	Impact or Consequence Data
Abscess	Leg condemned
Anaemia	Forequarter / Hindquarter condemned
Arthritis	Side condemned
Ascarids	Backbone removed
Bruising	Liver condemned
Colitis	Carcase skinned – partial or whole
Contamination	Ribs removed
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Erysipelas	Pluck condemned
Fever	Intestines condemned
Ilietis	Overfull guts (contamination)
Melanoma	Total carcase condemnation
Nephritis	
Pericarditis	
Peritonitis	
Pleurisy	
Pneumonia	
Ante mortem (emergency kill reason / tail bite / hernia / orchitis)	

5.2 Consensus around the proposed model for the Australian pork industry

Most of the workshop discussion and engagement with stakeholders surrounded developing a proposed model for the flow of data and/or information collected under a feedback system within the Australian pork industry. The model is depicted diagrammatically in Figure 2 and there was consensus on the model construct from the workshop participants.

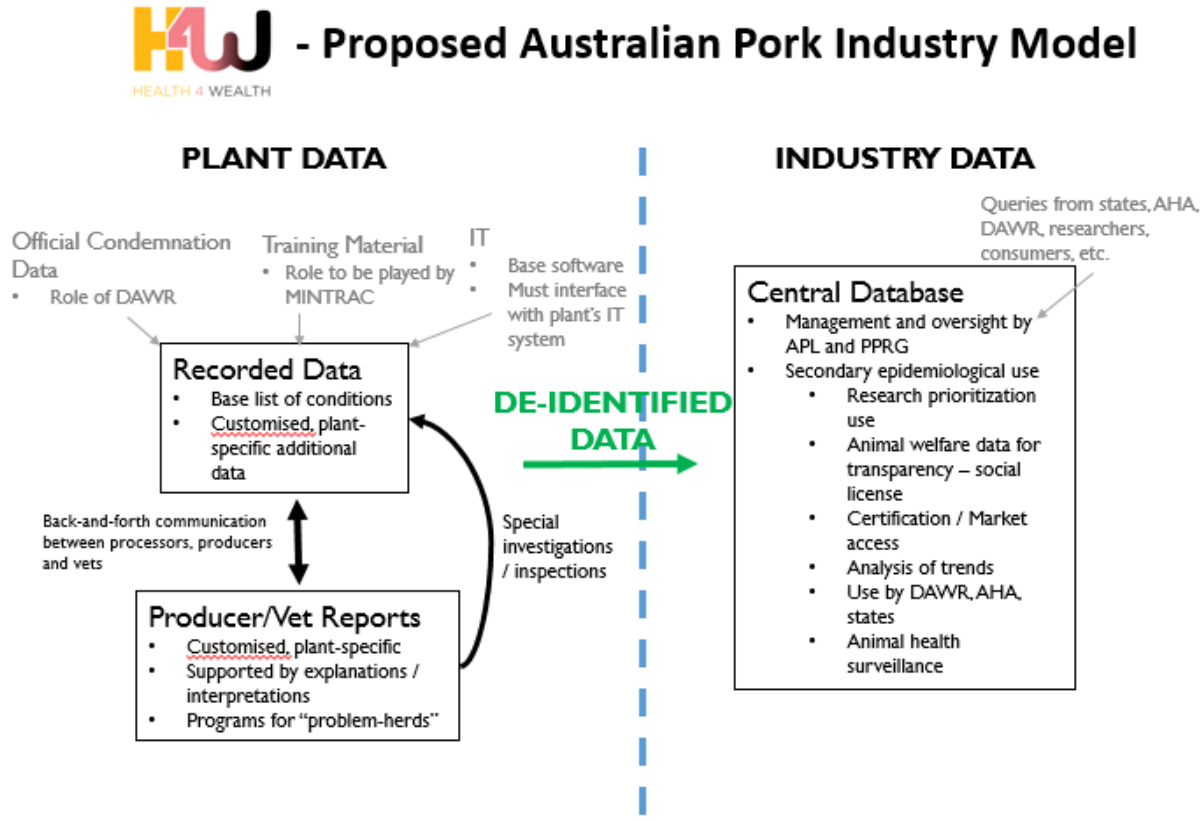

Figure 2: Proposed model for the use of the data collected as part of a standardised feedback system for animal health data.

Explanations of the key elements of the proposed industry model:

5.2.1 Recorded plant data

- There is a base list of data (gross abnormalities and impact or consequence data) for collection and recording, as discussed in Section 5.1.
- It was decided that a severity scoring system within the conditions / gross abnormalities was not required and the philosophy of "keeping it simple" was the preferred approach.
- Cost (or reduced financial return) is the most effective driver for continuous improvement and so including information on the product and/or financial loss to the producer, as identified by the impact or consequence data, is a key component of the data collection.
- Individual establishments may choose to record and report additional conditions and data to their clients/producers, as an enhanced service which differentiates them from their competitors – capacity and flexibility for individual processors to add company-specific features is important and was agreed.
- Some data will be collected purely for the processor's benefit and interest, for example faecal contamination, and do not need to be reported to the producer.
- The data collected on-site by processors are owned by the processing establishment.
- Whilst the current focus for a standardised feedback system is on the seven export pork establishments, all effort will be made to assist domestic establishments to participate in the standardised feedback system. One potential action for APL is to identify a target list of the larger domestic establishments for inclusion in the project and develop a strategy for their involvement.

- There must be consistency in the data that is recorded between establishments and states – how this will be verified is an issue that was raised and should be investigated as part of proposed pilot trials.

5.2.2 Reports to producers/vets

- Whilst there is unanimous agreement that the language and data recording terminology must be standardised, it is an individual processor's management decision as to how they want to implement and report the recorded information to their specific clientele/producer base. This is the value proposition for the processing industry for a standardised feedback system and processors, with their producers, will drive uptake and adoption.
- Internal reporting from processors to producers is left to the processor to manage – data access (who and what), timeliness of reporting (whether reports are sent in conjunction with the kill/payment sheet), reporting mechanisms (log-in system versus reports/emails/letters).
- Base templates for reports could be developed by the Health4Wealth Project as a tool for establishments.
- Costs of reporting from the processor to the producer would be covered by processors.

5.2.3 Special investigations / inspections

- A two-tiered approach was suggested where routine abattoir recording of the agreed list of conditions (Table 3) acts as the screening test. If a condition is flagged as new, frequent and/or severe, the next stage would be for the producer to request an in-depth secondary investigation by, for example, a pig veterinarian or PHMS provider.

5.2.4 Information Technology

- Some establishments already have a recording (and reporting) system in place and so ideally any "new" system or requirements should not override their current investment to make it redundant, but rather, integrate with already-installed in-plant technologies and systems.
- The recording of disease and health conditions could be via drop-down boxes on electronic terminals/touch screens along the slaughter chain, with different conditions relevant for different terminals (for example, ante-mortem, offal, viscera, carcase, retain rail intervention).
- There must be capacity for data to be exported from an establishment's database to a central database in a de-identified, standard and compatible format.
- A capability assessment of the software and hardware used across plants to inform investment by the Health4Wealth Project would be useful as one of the next stages.

5.2.5 Training

- Supportive explanatory fact-sheets with easy-to-understand explanations and descriptors (for example, what is meant by condition X, advice as to options to reduce or solve condition Y) and photos, need to be developed for use by producers and vets. This activity should be included as part of the Health4Wealth project, through APL and would require consultation of pig veterinarians through APV. It was suggested that AHA has pre-existing drafts for some conditions and that these could be reviewed and updated, if needed, for the purposes of the project.
- A significant issue raised was that of variability in meat inspectors' assessment of conditions, which relates back to the training of meat inspectors. There is variation in meat inspection training and the people doing the work on the floor, which affects the reliability of the data and hence, the value of the data to processors and producers.

5.2.6 Central database of de-identified data

- Standardisation of the language is key, but the secondary data use from a national de-identified database, whilst not opposed, is not a high priority for processors.
- The de-identified minimum base model data (as described in Section 5.2) can be used for industry defence purposes e.g. monitoring animal welfare indicators, and could potentially be managed by APL (data custodian).
- The de-identified data could also be utilised for other secondary epidemiological purposes such as research prioritisation, certification and market access, analysis of trends and animal health surveillance.
- It was suggested that the PPRG could nominate a management subgroup for the database which contains the de-identified minimum base model data. This management subgroup would be the forum for raising issues, requests to access the data, changes to the recording scheme, and would consult with other stakeholders such as producers and veterinarians accordingly. This management subgroup may include representatives from APL, PPRG and domestic abattoirs.
- APL would fund administration of the database which holds the de-identified minimum base model data, as well as any additional costs required for central database reporting.

5.2.7 DAWR review of language used for reasons for total carcase condemnation

- Baden Pearse, DAWR is leading a review of the language and terminology used to classify reasons for total carcase condemnation. An action from the workshop discussion was for APL to liaise with DAWR in relation to incorporating inputs from PPRG and APV into the review.

A summary of some of the discussion on industry issues is included in Table 4 below, provided by Eric Neumman.

Pilot trials of the draft standardised list of conditions, as well as software systems, data collection verification, reporting templates and other aspects in two or three establishments are the next phase of the Health4Wealth Project.

Table 4: Summary of issues by Dr Eric Neumman, Epi-Insight

Problem		Stakeholders affected	Consequences	How could the new programme be designed to resolve the problem?	Requires re-work and improved compliance with existing programme, OR need to devise a new system?
1	We have insufficient evidence to support country disease status claims to trading partners or OIE (or WTO). No objective data routinely collected that quantifies carcass lesions and national disease status.	Federal government APL	We have unrealised trade opportunities, or we may lose existing trade. Inability to rationally identify research funding priorities and inform policy decisions.	Available data would be complete and representative. Case definitions would be standardised.	New
2	Trim or condemnation occurs for reasons I don't understand, and I don't (reliably) know the nature or prevalence of ante- and post-mortem lesions in my pigs. Each abattoir reports lesion data differently.	Farmers	Cannot design/implement effective health plans that will mitigate the problem, and therefore am losing money due to trim, condemnations, mortalities, morbidities, etc. Difficult to interpret inspection lesions reports and therefore difficult to create control programmes.	Reporting would be easy to understand, simple, tied to interventions, and case definitions would be easily accessible.	Revise
3	Carcase defects are unacceptably high resulting in decreased throughput (retain issues) and high wastage.	Processors	High operational cost.	Mechanisms would be devised to change farmer behaviour via training, coercion, punishment, or reward. The person causing the problem needs to bear the cost of the problem (rather than being socialised across all producers as per current situation).	Either
4	Ante- and post-mortem inspection and reporting is variable between abattoirs.	APL veterinarians	Farmers may not be treated equally depending on which abattoir they sell to.		Revise

6. Implications & Recommendations

This project has developed a draft standardised feedback language for gross abnormalities and impact/consequence data that the Australian pork industry has agreed to be the minimum base model of data for collection in a standardised feedback system. Collective agreement has also been achieved with members of the PPRG and other industry stakeholders on the proposed model construct for the flow of data (Figure 2). However, agreement does not include domestic pork processors at this stage.

A number of key activities from the workshop discussion for consideration by the Health4Wealth Project are:

- Explanatory fact sheets with easy-to-understand descriptors for producers and veterinarians
- IT and software capability assessment and investigation of software platforms for processors
- The inclusion of meat inspection training in the considerations of implementing a standardised system.

The next recommended stage for the pork industry under the Health4Wealth project is pilot trials of the draft standardised list of conditions, as well as software systems, data collection verification, reporting templates, etc. in two or three establishments over nine to twelve months.

7. Intellectual Property

Not applicable

8. Technical Summary

Not applicable

9. Literature cited

Hamilton, D., Holds, G., Kiermeier, A., Pointon, A., and Tan, J. (2014). Uptake of Food Safety Research.
APL Project 2012/2400.

Hamilton, D., and Pointon, A. (2015). Pig Inspection Data Feedback Project. APL Project 2013/2417.

Hudson, D., and Hamilton, D. (2016). Assessing the economic and operational impact of establishing a national 'real time' slaughter chain reporting scheme for pig producers, processors and industry regulators. APL Project 2015/2209.

10. Publications Arising

Not applicable