Assessing Animal Welfare

Third OIE Regional Workshop
Stray Dog population management for Balkan countries (SDB3)
Belgrade, Serbia – 13-15 June 2018
The Italian situation

- National Framework Law 281/91
  - NO KILL policy
  - Euthanasia only in case of:
    - Incurable disease/pathology
    - The dog is proven to be dangerous
  - Variability of long-term shelters
    - Different scenarios because each Region has its framework to define shelter standard and requisites
  - Imbalance between high numbers of dogs entering the shelter and low adoption rates
    - Adoption
    - Returned to owner
    - Remain in shelter for life
  - High costs
  - AH/AW issues
Why AW and public health is at risk?

<table>
<thead>
<tr>
<th>HAZARDS</th>
<th>ADVERSE EFFECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overpopulation</td>
<td>Direct consequences</td>
</tr>
<tr>
<td>Inadequate housing conditions</td>
<td>• on the animal health and welfare (health and welfare impairments)</td>
</tr>
<tr>
<td>Social deprivation</td>
<td>• on public health (zoonosis transmission, bite events)</td>
</tr>
<tr>
<td>Poor health surveillance</td>
<td></td>
</tr>
<tr>
<td>Absence of minimum requirement for shelters</td>
<td></td>
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</tbody>
</table>

Due to individual variability dogs may perceive the same stressors differently and could exhibit different behavioural responses when housed in similar condition.

It is important to have a tool that allows a direct evaluation of the real welfare state of dogs housed in a shelters by observing individual reaction to the their environment.
Why to assess AW in long-term shelters?

• Improve the quality of life of housed dogs
• Define appropriate management and environmental adequacy
  - Improve coping abilities and adaptation
• Improve adoptability of dogs
  - Decreasing of sheltered dogs’ population
• Improve the welfare of shelter operators
Risk assessment applied to Animal Welfare

Factors affecting animal welfare

Resources available (resource-based measures)

Management practices (management-based measures)

Animal (e.g. breed, sex, age)

Animal tries to cope

Response of the animal
Effects on the animal (Animal-based measures)

Indicate the animal’s welfare (welfare indicator)

Factors (Hazards)

Negative consequences of hazards (vs benefits)

Consequences (Adverse effects)

Might respond differently to environmental inputs

Responses are the consequences of the factors acting upon the animal

Source: EFSA 2012

Animal based measures

- In the past the attention has been focused on welfare inputs (e.g. minimum standard of pens space allowance)
- Now, both EU and OIE recognise the importance to assess the livestock’s animals using animal based measures (welfare outcomes)

Animal based measures are the most accurate reflection of welfare state

Positive welfare concept

Positive welfare outcomes complementary to negative welfare outcomes

• To focus the attention on input variables that are important for animals and that determine positive outcomes as positive behaviour (e.g. play, sociability)

• To assess if the animal is in a condition of positive emotional state appears essential for a comprehensive assessment of welfare (e.g. QBA)

The IZSAM protocol was inspired from the Welfare Quality® assessment systems.

Welfare Quality® projects were successfully designed and applied to livestock animals.

WQ based their scientifically validated measures on 12 criteria grouped into four main principles.
Good feeding

Welfare Quality® principles

Good housing

Good health

Appropriate behaviour
Measures and procedures to assess the welfare of domestic dog were identified and selected following expert opinion and through study of scientific literature in dog biology, health, welfare and behaviour.
Sample size indications

- The sample size depends on the number of dogs housed at the day of the assessment. This values are calculated for obtaining a representative sample of the entire assessed shelter (Table 1).
- Include only dogs over 6 months and that have been in the shelter for two months or more.
- Sampling should be random: only assess a maximum of three dogs per pen (to evaluate the measures at individual level)
- Number of selected pens depends on dog sample size and should cover the different facilities in the shelter (shelter map can be useful)

**Table 1. Sample size**

<table>
<thead>
<tr>
<th>Total number of housed dogs</th>
<th>Number of animals to assess</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 29</td>
<td>all dogs</td>
</tr>
<tr>
<td>30-59</td>
<td>30</td>
</tr>
<tr>
<td>60-89</td>
<td>40</td>
</tr>
<tr>
<td>90-139</td>
<td>50</td>
</tr>
<tr>
<td>140 over</td>
<td>60</td>
</tr>
</tbody>
</table>
Methodology

SQ APP to carry out the protocol
1. General information about shelter management + Shelter map

2. Define the n° of the pens to assess (randomly on the map; 20 is the max n° of pens suggested in term of time)

3. Start the assessment

   a. 2 meters from the pen. No interaction with animals (unless required by protocol)

   b. Visually choose the subjects that will be assessed later at individual level (max 3 dog per pen)

   c. Observe all animals in the pen for 1 minute and maintain a neutral and relaxed posture

   d. It’s possible to conduct the assessment from inside the pen if there are many dogs or the pen is large

   e. Start observing the chosen dogs one at a time

   f. Carry out the short test situation to score fear/aggression

   g. Record the presence or absence of anomalous behaviours

   h. Record the emotional state profile and barking level (VAS scale)

   i. Repeat the same procedure for each selected pen (from a to h)
3 levels of assessment

1. **Shelter level**: the measures are recorded evaluating the shelter as a unit. It includes mainly management-based indicators (e.g. feeding regimen, exercise routine).

2. **Pen level**: the measures are recorded evaluating each pen as a unit and observing all the animals confined in it (irrespective of the number of animals). Parameters measured at pen level are both resources-based (e.g. space allowance, bedding) and animal-based (e.g. behaviour, diarrhoea)

3. **Animal level**: the measures are recorded evaluating each animal as a unit. All measures are animal-based (e.g. BC, health parameters)
Measures scored at (1) shelter level

- General information
- Social housing
- Exercise
- Training/rehabilitation
- Surgeries/pain control
- Mortality
- Feeding
General information

Shelter ID

- Number of dogs present in the shelter on the day of the visit
  - Excluding hospitalised animals
- Number of hospitalised dogs
- Number of dogs entered in the previous solar year
- Number of adopted dogs in the previous solar year
  - Excluding dogs returned to their owners
- Temperature (°C) & humidity (%)
Dogs are **social animals**, isolation is detrimental for their welfare.

**Single housing should be avoided** in shelters especially when dealing with long-term confinement.

**Isolation** is acceptable for clinical or safety reasons.
Social housing

- **Type of measure:** Management based
- **Welfare criteria:** Expression of social behaviour
  - Number of single housing pen
  - Number of pair housing pen
  - Number of group housing pen ($\leq 5$)
  - Number of group housing pen ($> 5$)
  - Total number of pen
Type of measure: Management based

- Welfare criteria: Expression of other behaviours

Small enclosures discourage exercise and restrict the type of locomotion and the ability of the dogs to control social interaction and express natural behaviour

Exercise

- Outdoor fenced area
  - Daily (> 3 hours)
  - Daily (< 3 hours)
  - Weekly
  - No or there is not a regular routine (depends on personnel availability)

- Outdoor walking on leash by shelter personnel
  - Daily
  - Weekly
  - No or there is not a regular routine (depends on personnel availability)
Training and rehabilitation

Type of measure: Management based

- **Welfare criteria:** Good human-animal relationship
  - Presence of trained personnel for activities with dogs
    - Walk at leash
    - Basic education
    - Learning activities
  - Presence of specialised personnel in the behavioural rehabilitation of problematic dogs

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**Basic dogs training and learning can help the development of mental activities and are the basis for an adequate human-animal bond and improve the possibility of adoption.**

The behavioural rehabilitation promotes human-animal relationship, improves dogs welfare and the possibility of adoption.
Surgery and control of pain

- **Type of measure:** Management based
- **Welfare criteria:** Absence of pain induced by management procedure
  - Presence of operating procedure for post-surgical monitoring
  - Presence of hospital pens
  - Presence of protocols of analgesia
**Feeding**

- **Type of measure:** Management based
- **Welfare criteria:** Absence of prolonged hunger
  - **Type of diet**
    - Pellets
    - Cooked food
    - Canned food
  - **Special diets** for puppies, old animals, hospitalised animals
  - **Feeding regimen**
    - Once per day
    - Twice per day
    - Ad libitum
Mortality

**Type of measure:** Management based

**Welfare criteria:** Absence of disease

- Number of **euthanasia** because of **health problems** (in previous solar year)
- Number of **euthanasia** because of **behavioural problems** (in previous solar year)
- **Number of death other than euthanasia** (in previous solar year)
- **Dog shelter population** (mean number of animals in previous solar year)
Measures scored at (2) pen level

- Space allowance
- Sharp edges
- Water supply
- Bedding
- Panting/shivering/huddling
- Barking level

- Abnormal behaviour
- Evidence of pain
- Diarrhoea
- Coughing
- Emotional state
**Space allowance**

- **Type of measure:** Resources based
- **Welfare criteria:** Easy of movement
  - Enclosure length and width (m)
  - Number of animal in the pen up 20 kg
  - Number of animal in the pen over 20 kg

**Space expressed in m² per dog**

Excessive spatial restriction could be associated to the impossibility to express normal behaviours, increasing probability of active repetitive behaviours.

The adequacy is calculated using the recommendation of 2010/63/UE

<table>
<thead>
<tr>
<th>Weight (Kg)</th>
<th>Minimum enclosure size for one or two animals (m²)</th>
<th>For each additional animal add a minimum of (m²)</th>
<th>Minimum height (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 20</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Over 20</td>
<td>8</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

These dimensions are acceptable only if animals have access to outside runs and/or daily exercise.
Sharp edges

**Type of measure:** Resources based

**Welfare criteria:** Comfort around resting

- Presence of sharp edges or protrusions inside the pen or along the fence that could be harmful for dogs
**Type of measure:** Resources based

**Welfare criteria:** Comfort around resting

- Type of bedding (kennel, basket, other)
- At least one bedding per dog
- Bedding is safe (no harmful edges or ingestible parts)
- Bedding is dry and clean
**Type of measure:** Resources based

**Welfare criteria:** Absence of prolonged thirst

- Type of drinkers (bowl, bucket, automatic fountain, other)
- Drinkers are functioning (full/empty)
- Water is clean (with feaces or mould)
- Drinking is safe (no sharp edges)
Shelter from adverse weather condition

- **Type of measure:** Resources based
- **Welfare criteria:** Thermal comfort
  - Shelter from excessive exposure to sun
  - Shelter from strong wind
  - Shelter from rain
  - Air circulation

**Indoor area (area with vertical walls and roof) should be insulated, shelter from adverse weather condition and ensure air circulation**

**Outdoor area:** fenced pens should be characterised by presence of roof and its slope, extension and direction, gutters, lateral barriers, hedge or similar
Thermoregulation

- **Type of measure:** Animal based
- **Welfare criteria:** Thermal comfort
  - Number of animals panting per pen
  - Number of animals shivering/huddling per pen

It's a sensible measure because it depends on different seasons.

Thermal comfort can vary from dog to dog as strictly linked to different conditions such as hair length, muzzle shape, age or physical conditions.

Panting: dog pants for physical exertion when temperature is warm.
Shivering: it is a physical response to cold, especially if associated to huddling.
Abnormal behaviours

- **Type of measure:** Animal based
- **Welfare criteria:** Expression of other behaviours
  - Presence/absence of dogs showing active repetitive or other compulsive behaviours

**Active repetitive:**
- Circling
- Pacing
- Whirling-tail chasing
- Wall bounce

**Other compulsive behaviour:**
- Self-mutilation
- Environment related: compulsive licking ground or licking/chewing fence, bedding or other object
Diarrhoea-Coughing-Pain

Type of measure: Animal based

Welfare criteria: Absence of disease

- Presence of visible liquid manure in the pen
- Presence of dogs coughing in the pen
- Presence of dogs showing sign of discomfort or pain in the pen
**Emotional State**

Type of measure: Animal based  
Welfare criteria: Positive emotional state

**Emotional state** focus not so much on what an animal does, but on how it does it, that is, its dynamic style of interaction with the environment *(Wemesfelder 2001)*

<table>
<thead>
<tr>
<th>Barking level</th>
</tr>
</thead>
</table>
| • **Type of measure:** Animal based  
• **Welfare criteria:** Expression of other behaviours  
  - Perceived noise in the pen using the VAS scoring (when assessing the emotional state) |

**Visual Analogue Scales:** to quantify how much an adjective represents the animals housed in that pen.  
It is defined by its left ‘minimum’ and right ‘maximum’ point. Min. means that the expressive quality indicated by the term is entirely absent in any of the animals you have seen. Max. means that this expressive quality is dominant across all observed animals.
Measures scored at (3) individual level

- Reaction to human
- Body condition
- Cleanliness

- Skin condition
- Lameness

A sample of dogs will be selected to assess individual measures depending by the dog population size. Animals assessed within one pen should be sampled in random order (maximum 3 dogs per pen).
Reaction to humans

Fear and aggression are among the most common behavioural problems that impair interaction between dogs and human beings, thereby representing a failure in communication between the two species and also a decreasing chance of adoption.

Type of measure: Animal based

Welfare criteria: Good human-animal relationship

A. Stand still, ignore dog (30 sec.)

B. Crouch, talk gently to dog (30 sec.)
In presence of unfamiliar person the dog can show:

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-no signs</td>
<td>No signs of fear or aggression, posture is neutral, relaxed looking at or ignoring the assessor, or friendly/sociable, decreasing distances and/or greeting the assessor.</td>
</tr>
<tr>
<td>1-fear</td>
<td>Signs of fear, associated to low or very low postures, often increasing distances or hiding from assessor, ears back, eye contact brief and indirect, tail hangs low or tacked between legs.</td>
</tr>
</tbody>
</table>
| 2-defensive/offensive aggression | Sign of aggression, with or without fear, are usually characterized by a general condition of tension of the dog’s body.  
Sign of fear and of defensive aggression: body lowered, weight over rear legs, tail down tense or tucked between legs, hackles raised, ears back, pupils dilated, muzzle tense, nose wrinkled, snarled teeth exposed.  
Signs of offensive aggression: weight forward, tail stiff, raised, ears erect forward, bared teeth and lips curled, eyes staring, hackles may be up. |
**Body condition**

- **Type of measure:** Animal based
- **Welfare criteria:** Absence of prolonged hunger

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too thin</td>
<td>Bones easily visible (i.e. ribs, pelvis, lumbar vertebrae); loss of muscle mass, obvious waist and abdominal tuck.</td>
</tr>
<tr>
<td>Adequate</td>
<td>No excess of fat covering; observable waist when viewed from above, abdominal tuck when viewed from side.</td>
</tr>
<tr>
<td>Too heavy</td>
<td>Excessive fat cover, ribs not palpable; fat deposit on neck and limbs; waist absent and abdominal distension present.</td>
</tr>
</tbody>
</table>

The score should be only visual. For the purpose of this welfare assessment, the ability to detect animals which are at inappropriate condition is the main objective.

A simplification of body condition system:
- TOO THIN
- ADEQUATE
- TOO HEAVY
Cleanliness

Type of measure: Animal based
Welfare criteria: Comfort around resting
- Animal is clean
- Animal is dirty/wet

The coat should be clean and dry, free from urine or faeces. Cleanliness of the body parts is defined as the degree of dirt of the body (splashing).

Assess the coat of the dog and look for wet or dirty areas with faeces.

The assessment is visual on ONE side of the body.

Make sure the dog is standing up for a correct assessment.
Skin condition

**Type of measure:** Animal based

**Welfare criteria:** Absence of injuries
- Presence of visible wounds
- Presence of hair loss areas
- Presence of swelling areas
- Evidence of ectoparasites

Skin condition is an indicator of poor welfare related to the enclosure but also to health problems.

Skin condition is assessed by the observation of ONE SIDE of the dog’s body.

Wound will be scored only if are recent, infected or larger than 2 centimeters.
Lameness

Type of measure: Animal based

Welfare criteria: Absence of injuries

- Score 0: dog shows no lameness
- Score 1: dog is lame but is still walking
- Score 2: dog is severely lame, almost or completely unable to walk

The observation of lameness could suggest the presence of foot wounds or other painful disease.

A dog with a surgically amputated limb will receive a score of 0 if the amputation doesn’t compromise the dog health. Dogs generally well tolerate healed amputations (without wounds or infected parts).

Otherwise, a dog with an amputated limb with complications will receive a score of 1.

The dogs are observed while walking
When performing the assessment in-field, a precise order has to be followed to take the measures:

<table>
<thead>
<tr>
<th>Measures</th>
<th>Sampling</th>
<th>Time needed approximately</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Management questionnaire</td>
<td>Annex 1</td>
<td>15 min</td>
</tr>
<tr>
<td>- General information</td>
<td>Shelter level</td>
<td></td>
</tr>
<tr>
<td>- Social housing</td>
<td>Score with help of shelter manager</td>
<td></td>
</tr>
<tr>
<td>- Exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Training and rehabilitation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Surgeries/pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Mortality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Feeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Resources checklist</td>
<td>Annex 2</td>
<td>2 min/pen</td>
</tr>
<tr>
<td>- Space allowance</td>
<td>Pen level</td>
<td></td>
</tr>
<tr>
<td>- Sharp edges</td>
<td>Score from outside/inside the pen</td>
<td></td>
</tr>
<tr>
<td>- Bedding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Water supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Measures scored at pen level</td>
<td>Annex 3</td>
<td>1 min/pen</td>
</tr>
<tr>
<td>- Screen from adverse weather</td>
<td>Pen level</td>
<td></td>
</tr>
<tr>
<td>conditions</td>
<td>Score from outside the pen</td>
<td></td>
</tr>
<tr>
<td>- Thermoregulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Abnormal behaviour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Signs of diarrhoea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Coughing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Evidence of pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Individual assessment</td>
<td>Annex 4</td>
<td>2 min/animal</td>
</tr>
<tr>
<td>- Body condition</td>
<td>Individual level</td>
<td></td>
</tr>
<tr>
<td>- Cleanliness</td>
<td>Score from outside/inside the pen</td>
<td></td>
</tr>
<tr>
<td>- Skin condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Lameness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Reaction towards human</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Emotional state profile</td>
<td>Annex 5</td>
<td>1 min/pen</td>
</tr>
<tr>
<td>- Emotional state</td>
<td>Pen level</td>
<td></td>
</tr>
<tr>
<td>- Barking level</td>
<td>Score at the end of each pen assessment</td>
<td></td>
</tr>
</tbody>
</table>

Summary of the welfare measures with main sampling indications and approximate time needed to carry out the assessments parts.
Application of Shelter Quality Protocol on field

- Development of Web application for mobile device
- Application of Shelter Quality protocol (SPQ2) in 64 Italian shelters
- Identify risk factors which affected the long-term sheltered dogs’ welfare
- Development of scoring system and
• Feeding regimen ad libitum and cooked food showed a significant association with inadequate BCS
• The presence of skin lesions was influenced by bedding inadequacy and type of bedding
• The presence of dirty/wet dogs was related to the cleanliness of bedding materials and the non-availability of one bed per dog
• The inadequacy of shelter from adverse weather condition and bedding materials were significantly associated with manifestation of polypnoea
• The absence of training activities with dogs, the impossibility to outdoor areas’ access and to walk on leash increased significantly the probability to observe fear and aggressive dogs’ reaction toward humans.
• The presence of diarrhoea increased significantly when the feeding regimen is one/day or ad libitum and when the access to outdoor areas was not allowed
• Shelter quality protocol is a valid, reliable and practical tool for assessing the dog welfare in shelter long-term confinement
• The emphasis is on animal-based measures (outcome) to estimate the actual welfare state of animals (for example: their behaviour, health or physical condition)
• This approach permits an assessment system that is partially independent of the shelter facilities and management parameters (input)
• The scoring system permits to obtain an objective information about animal welfare situation in long-term shelters through a numerical score
• The scoring system permits to identify the critical points on which to take action in order to improve the animal welfare
• The area of application of SQP may be extended to commercial breeding facilities or other situation in which dogs are confined (e.g. military or working dogs)
**Further developments**

- The App will be updated through the integration of scoring system to obtain automatically the score after the application of SQP

- The App will work offline in order to collect the data also without network-phone coverage
Thank you!