
25
FIELD EPIDEMIOLOGY TRAINING PROGRAM
1987
Years
OF INTEGRITY AND EXCELLENCE
IN FIELD EPIDEMIOLOGY

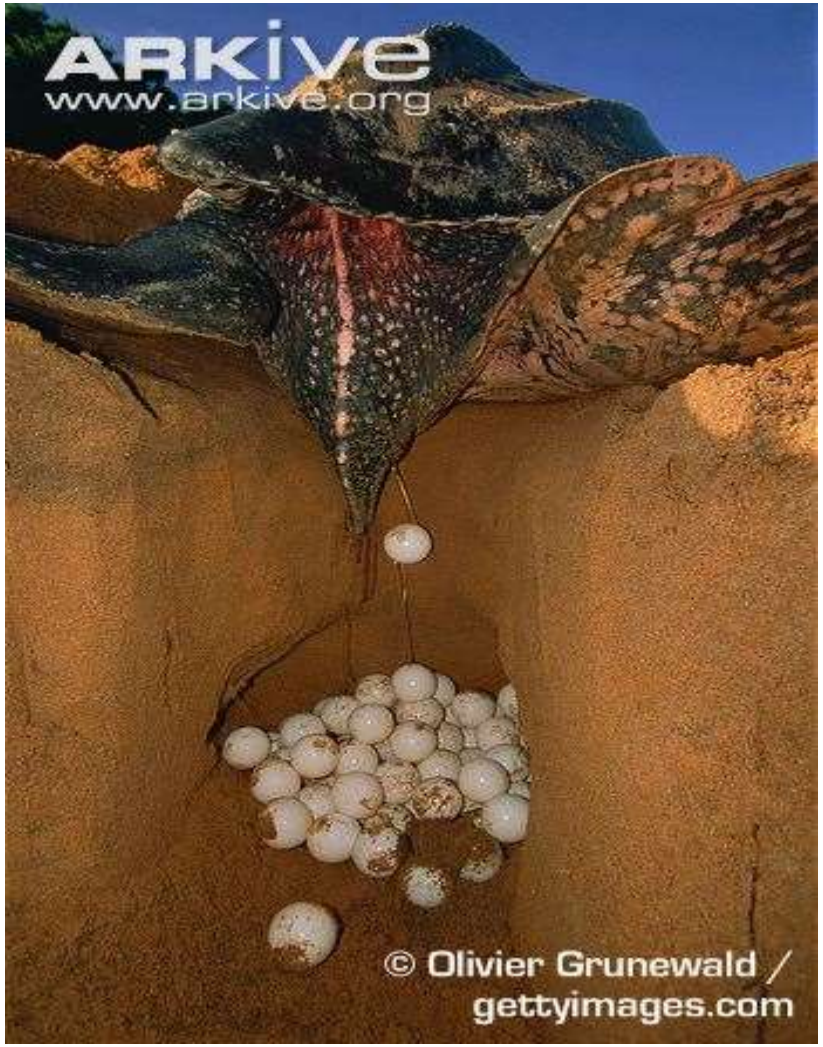
CHELONITOXISM OUTBREAK EASTERN SAMAR

AUGUST, 2013

RAY JUSTIN C. VENTURA, RN
FETP Fellow
Epidemiology Bureau- Department of Health

Integrity and Excellence in Field Epidemiology

Introduction



Chelonitoxism

Rare, sometimes fatal

Food poisoning

Eating marine turtles

**Silas EG, Fernando AB (1984) Turtle poisoning. Bulletin, Sea Turtle Research and Conservation 35:62–75*

All body parts are potentially toxic

Most commonly implicated turtles:

Green sea
(*Chelonia mydas)*

Hawksbill turtle
(*E. imbricata)*

Signs and Symptoms*

Nausea

Vomiting

Coma

Death

* *Fussy A et al. Chelonitoxism: new case reports in French Polynesia and review of the literature. Toxicon, 2007*

Documented Outbreaks

Cebu*	Mindanao+	Sorsogon^
33 cases	14 cases	6 cases
14 deaths	11 deaths	3 deaths
(CFR 42%)	(CFR 79%)	(CFR 50%)

*Taylor, E.H., 1921. Amphibians and Turtles of the Philippines Islands. Bureau of Printing Ed, Manila, (259p).

+ Ronquillo, I.A., Caces Borja, P., 1968. Notes on a rare case of turtle poisoning

^ Deveraturda I., Ventura R., Delos Reyes V., Sucaldito MN., Tayag E., 2014. Turtle meat poisoning outbreak in Barangay Liang, Irosin, Sorsogon, Philippines. Epidemiology Bureau Library, Department of Health

21 August 2013

Foodborne Illness event
Coastal village Rawis
Arteche, Eastern Samar

27 August 2013

FETP* team investigates

* Field Epidemiology Training Program

Objectives

1) To verify existence of an outbreak;

2) To confirm the diagnosis;

3) To determine the source & mode of transmission;

4) To identify risk factors;

5) To recommend control measures

Background

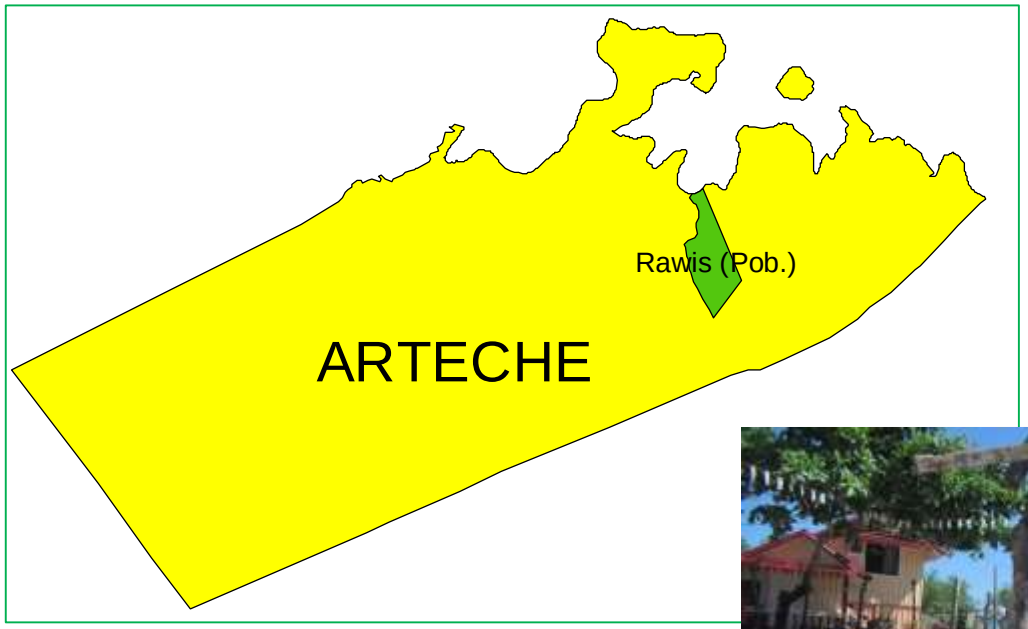
Municipality of Arteche

Third class

Population: 16,463

20 Villages

4 Village Health Stations



Village Rawis

Methods

Case

Any person in Arteche who developed dry mouth and burning sensation in the throat from 15 August to 27 August, 2013.

Descriptive Study

Active case finding (Records review)

Initial 10 cases interviewed

- Demographics
- Food and water exposures
- Environmental risk factors

Disease severity*

Mild – throat pain and dryness of mouth

Moderate – mouth ulcerations, white coated tongue

Severe – Neurological manifestations

* *Fussy A et al. Chelonitoxism: new case reports in French Polynesia and review of the literature. Toxicon, 2007*

Retrospective Cohort Study

Specific Questionnaire
(Body parts, Amount, Turtle-meat soup)

Epi info ver. 3.5.4

Univariate significant *(P<0.2)*

Multivariate analysis: forward stepwise

Environmental Investigation

Site Visit

Village Rawis

Sub-Village 4

Interview

MENRO*

Fisherman

* Municipal Environment and Natural Resources Officer

Results

Fig. 1. Epidemic curve, Chelonitoxism Outbreak (N=68) Eastern Samar Province, Philippines, 2013

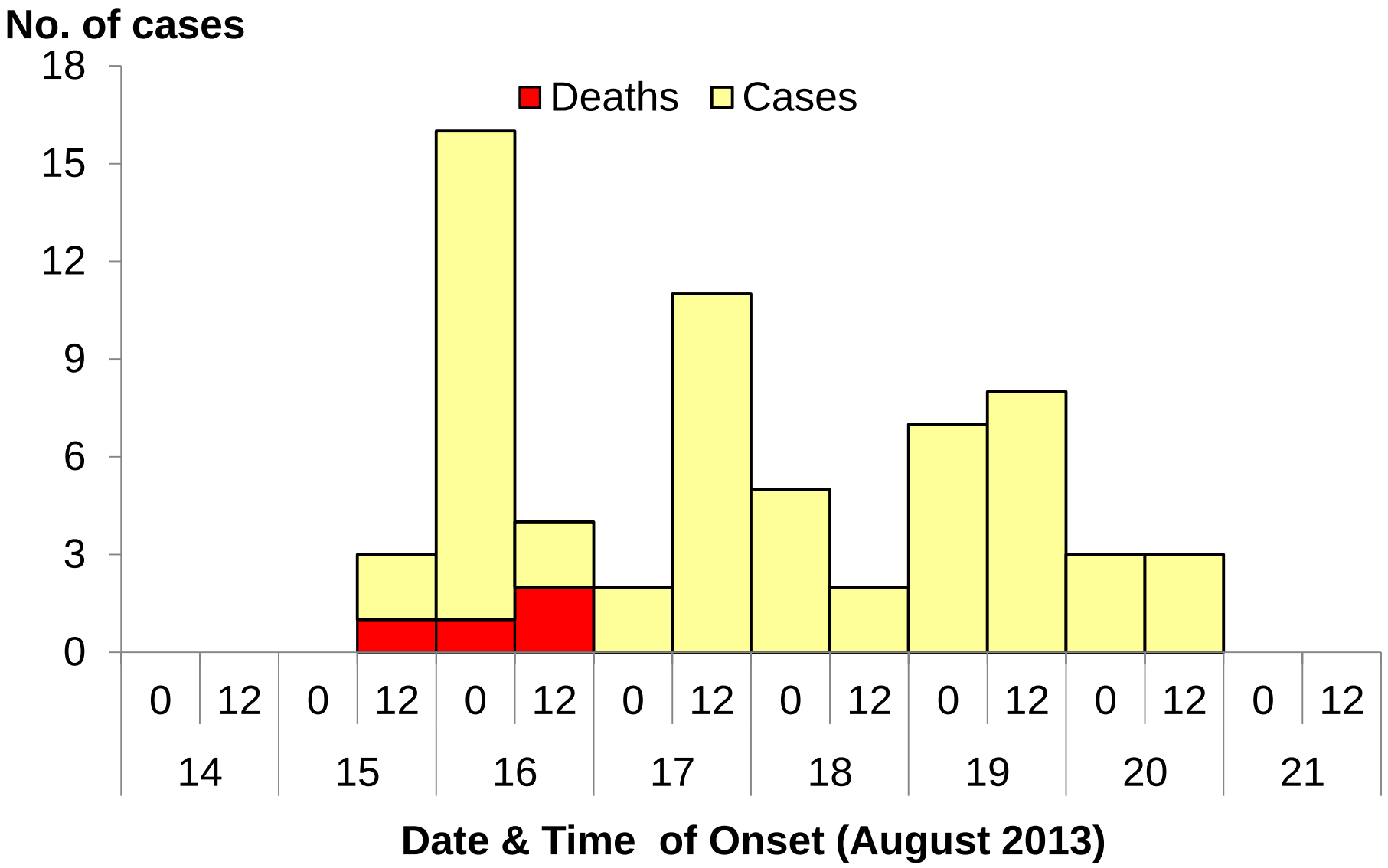
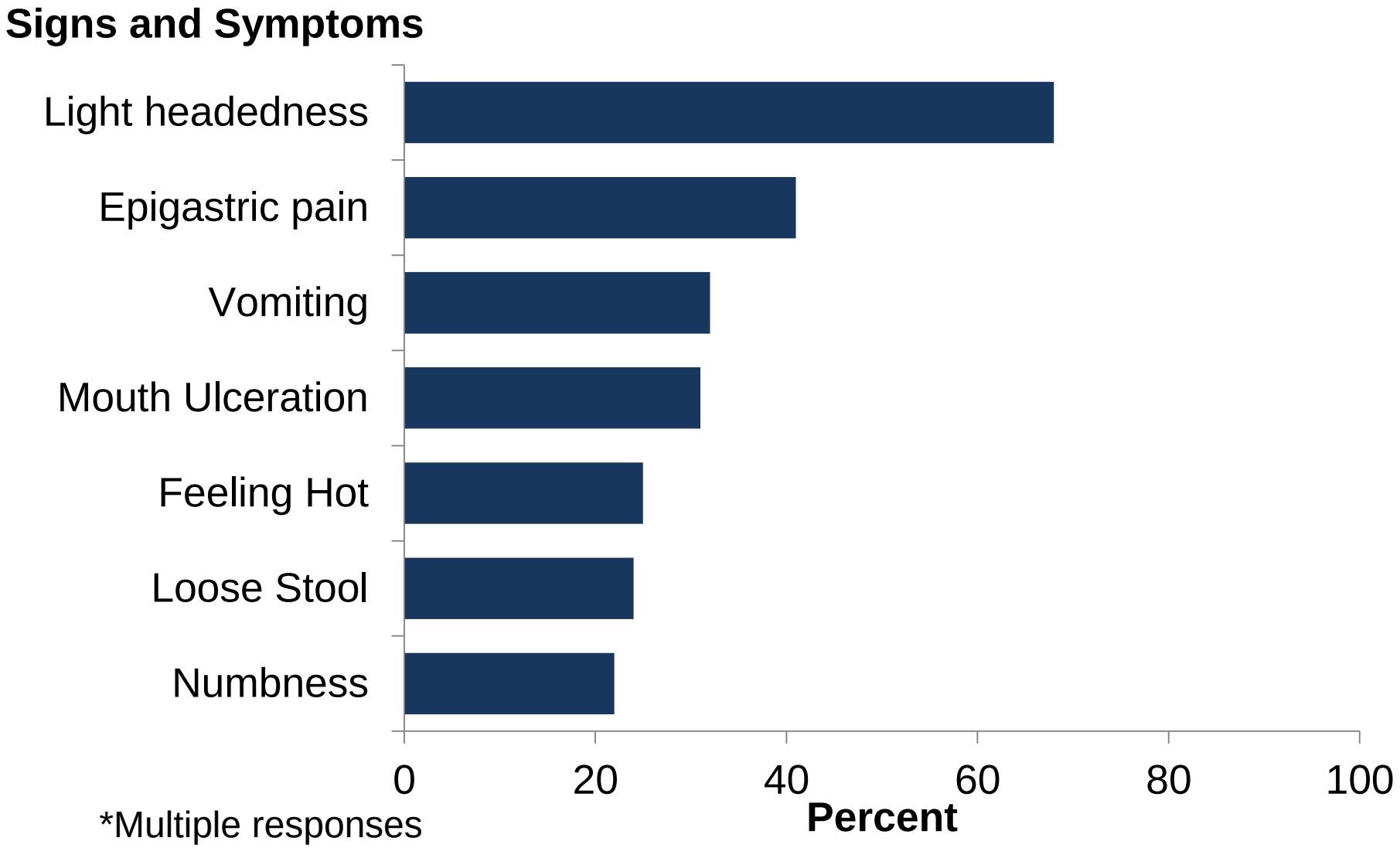
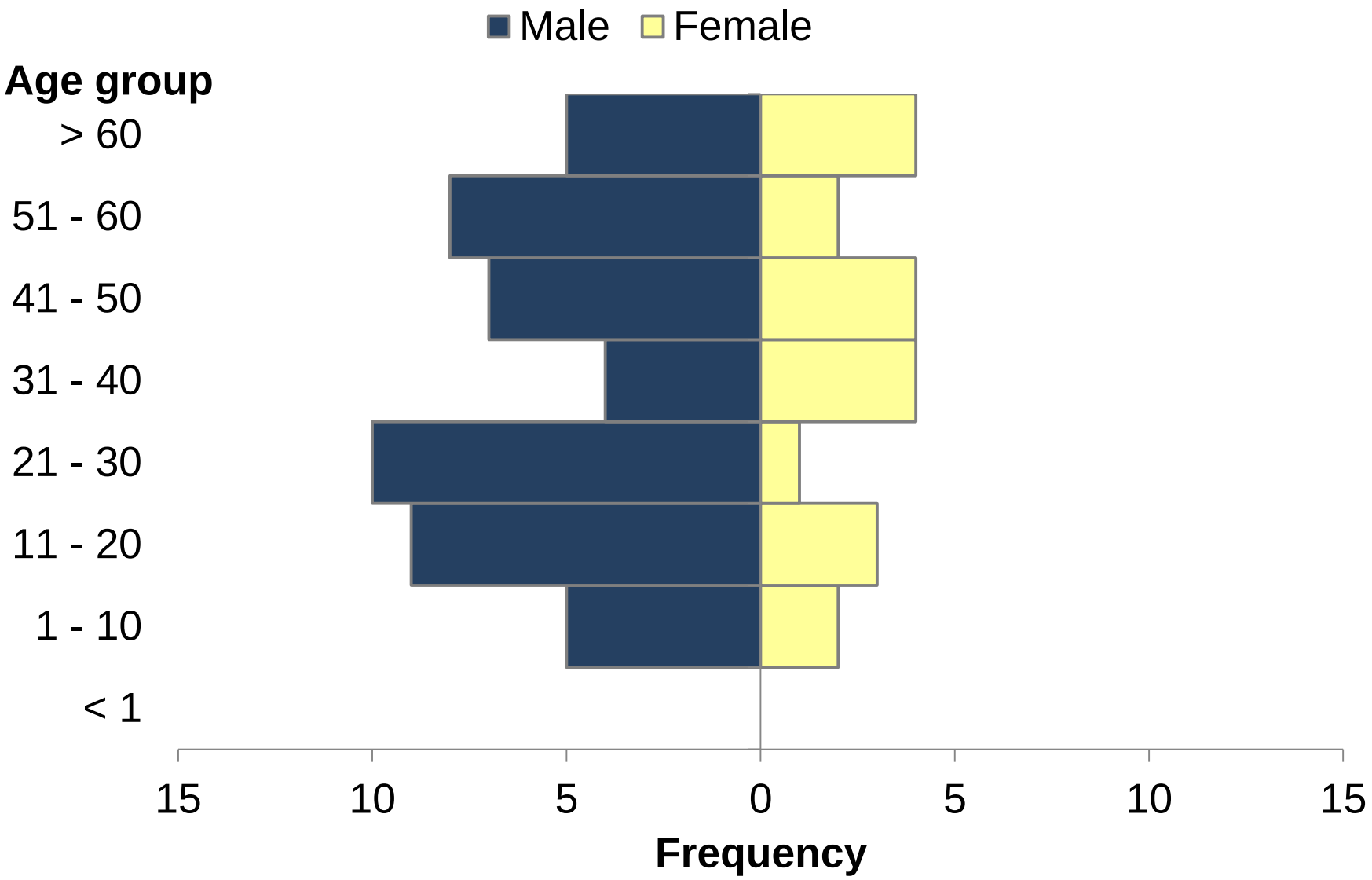


Figure 2. Signs & Symptoms of Cases (N=68)* Eastern Samar Province, Philippines, 2013



*Multiple responses

Figure 3. Distribution of Cases as to Age & Sex (N=68) Eastern Samar Province, Philippines, 2013



Profile of Cases

All came from Sub-Village 4

All ate turtle meat prior to illness

51% - Mild

40% - Moderate

9% - Severe

Profile of deaths

Age range: 23 to 80 years (*M* = 57 years)

Onset: 24 to 46 hours (*M* = 34.5 hours)

All severe manifestations

75% came from one family

Profile of deaths

100% >10 tablespoons of turtle meat

100% consumed turtle soup

Body parts:

- 100% internal organs
- 75% turtle eggs
- 25% turtle head

Cohort study

136 of 170 (80%) residents of Sub-Village 4.

74% ate turtle meat

Table 1. Factors Associated with Turtle Meat Poisoning, Eastern Samar Province, Philippines, 2013

Characteristics*	Crude RR (95% CI)	Adjusted RR (95% CI)
Sex		
Male	1.53 (1.03 – 2.27)	2.02 (0.88 – 4.63)
Consumed turtle soup		
≥ half a cup	1.62 (1.19 – 2.23)	4.26 (1.01 – 18.00)
Body part consumed†		
Meat	1.92 (1.28 – 2.88)	6.93 (2.82 – 17.02)
Internal Organs	1.65 (1.19 – 2.30)	8.06 (0.90 – 71.72)
Blood	1.60 (1.14 – 2.26)	1.03 (0.12 – 8.54)
Head	1.46 (0.8 – 2.41)	-
Egg	1.72 (1.15 – 2.56)**	-

*Totals may not add up due to missing responses
† May have more than one response
** P value more than >0.05

Table 2. Dose–response analysis Eastern Samar Province, Philippines, 2013

Tablespoons of Turtle Meat	Ill	Not Ill	AR (%)	ARR	95%CI
> 2	48	7	87.3	2.47	1.55 – 3.94
2	8	3	72.7	2.06	1.15 – 3.69
1	12	22	35.2	Ref	-
0	0	36	0	-	-

AR – attack rate, ARR – attack rate ratio; CI – confidence interval

Environmental Investigation

Fishing – primary livelihood

Aware of law* protecting sea turtles

Green sea turtle, Hawksbill turtle

*Republic Act 9147 (2001)., An act providing for the conservation and protection of wildlife resources and their habitats, appropriating funds therefor and for other purposes, Republic of the Philippines.

Interview with the Fisherman

- 15 August (7:00 AM) Turtle sighting
- Green sea turtle
- Trapped and unable to swim
- Sold 12 kilos of meat
- No special preparation on the meat
- Individually cooked by families
- No banquet

Public health measures

Community assembly:

- Awareness campaign on law
- Dangers of consuming turtle meat

Conclusion and Discussion

Discussion

- Foodborne outbreak: Turtle-meat
- All ate turtle meat
- Those who did not eat: No symptoms
- Symptoms similar with other outbreaks
- Strong evidence – Dose response

Other studies

Micronesia*

191 cases

6% Case fatality rate (CFR)

Other studies have 100% CFR

*Pavlin B., Musto J., Pretrick M., Sarofalpiv J., et al., Mass poisoning after consumption of a hawksbill turtle, Federated States of Micronesia, 2010. Western Pacific Surveillance and Response Journal, 2015 doi:10.5365/wpsar.2014.5.3.006

Limitations

Incomplete capture of study population

May have overestimated occurence

Laboratory testing not done

Lack of testing centers
Turtle outbreaks not lab. confirmed

Conclusion

- Source: Turtle meat
- Dangers of consuming turtle meat
- Animal consumption ongoing practice
- Implementation of the law???
- Publish to raise awareness


25
FIELD EPIDEMIOLOGY TRAINING PROGRAM
1987
Years
OF INTEGRITY AND EXCELLENCE
IN FIELD EPIDEMIOLOGY