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Name Eric G. Comstock, M.D. Phone 790-0160

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REPORT ON A ONE-DAY INTENSIVE TRAINING PROGRAM: Treatment of Acute Intoxication. St. Louis, Missouri, March 6, 1971

Eric G. Comstock, M.D., Program Coordinator, Executive Director, American Academy of Clinical Toxicology.

The first free-standing program on the emergency management of acute intoxication to be presented by the American Academy of Clinical Toxicology took place in St. Louis on March 6, 1971, after nearly a year of planning. The program was designed with the assistance locally of Dr. Michael Holden of the Missouri State Psychiatric Institute, Dr. George Murphy of Washington University, Department of Psychiatry, and Dr. George Gantnor, Medical Examiner, St. Louis County. It was presented in the auditorium of the St. Louis Medical Society. Dr. Eric G. Comstock opened the program with a statement of the objectives to be achieved.

George E. Gantnor, M.D., Chief Medical Examiner of St. Louis County, then discussed briefly the statistics on poisoning accumulated in his office over the past few years. The nature of common poisoning problems encountered in Missouri was further described by a summary of poison cases reported to fifteen Poison Control Centers in Missouri.

Emergency Room equipment, supplies, and drug formulary were outlined by Mark Thoman, M.D., Executive Secretary, Iowa Poison Information Center, Des Moines, Iowa. With a principally pediatric orientation, Dr. Thoman discussed the priorities to be observed in the treatment of poison cases presenting in the Emergency Room. He emphasized the number one obligation of the attending physician and nursing staff to be the support of respiratory and circulatory systems, then to evaluate the toxin taken by history and by simple laboratory procedures, to attend to the elimination of the toxin ingested as safely and as rapidly as available means permit, and to provide adequate supportive and symptomatic treatment throughout the illness. Specific antidotes where they are appropriate then may be added. His presentation was punctuated with case experiences and many pitfalls were pointed out, emphasizing how they might be avoided.

Turning from the pediatric orientation to the problems encountered so frequently in adults, Dr. George E. Murphy, Professor of Psychiatry at Washington University in St. Louis, discussed psychiatric aspects of self-destructive behavior. This is the fundamental process behind the most commonly encountered reason for serious intoxication. Dr. Murphy stated that the vast majority of suicide attempts in the United States, probably 80% or more, are by ingestion of drugs. He emphasized that a suicide attempt is not simply a failure at suicide and cautioned that the severity of poisoning is not a reliable index of seriousness of intent. The role of the physician is not only to save the life of the individual during the acute episode, but to restore patients to normal functioning by considering the attempt to be a plea for help and seeing that appropriate help is provided. With his usual warm and conversational manner, Dr. Murphy described a number of the situations found commonly to lead to self-destructive behavior. The urgent need for recognition of suicidal risk was emphasized as he described depressive illness and alcoholism to account for one quarter to one third of the attempts. Since these diagnostic categories frequently are missed, the clues for their detection were described. The population of suicide attemptors subsequently sustains the highest risk of death by suicide of any group. Careful attention to the underlying disease processes is an obligate responsibility of the physician.

The clinical diagnosis of acute intoxication from the point of view of a pathologist, as well as a physician personally involved in Emergency Room treatment, was discussed by Dr. Leo Lowbeer, Chief Consultant Pathologist of the Hillcrest Medical Center in Tulsa, Oklahoma. Dr. Lowbeer pointed out that four years ago suicidal poisonings resulted in about one fourth of those reported to the Poison Treatment Center with which he is associated. This proportion has increased until currently, suicidal poisonings now represent 62% of all poisoning. From his long experience in both the clinic and the laboratory, Dr. Lowbeer described the clinical signs and symptoms commonly associated with intoxication and their diagnostic significance. A number of interesting cases were presented which demonstrated typical problems. The pitfalls in establishing a diagnosis circumstantially were emphasized by several cases where drugs were strongly implicated yet death was demonstrated to have occurred from unrelated disease or by poisoning which did not involve the drugs. In discussing the problem of poisoning by aspirin, a rule of thumb for estimating the potential seriousness of ingestion was given for baby aspirin - namely, one baby aspirin per pound of body weight represented the limit at which intoxication may or will occur. Dr. Lowbeer's presentation was illustrated by a number of interesting slides drawn from his patient experience.

Laboratory diagnosis was discussed by Dr. Vernon A. Green, Chief of the Toxicology Service at the Children's Mercy Hospital in Kansas City, Missouri. Introducing the subject, Dr. Green emphasized that when poisoning is suspected, the clinician and the laboratory must be in good communication since only by limiting the toxic substances to be searched for in a biological specimen can the laboratory have any prospect to assist materially within a reasonable period of time. Dr. Green emphasized the increasing necessity for rapidly available reliable laboratory confirmation of the clinical impression. A number of quantitative and semi-quantitative procedures were described and their interpretation with respect to clinical findings discussed. Specimen collection appropriate to specific toxic substances was described.

Exemplifying the advantages to be gained when a clinical pathologist devotes himself for an interval to involvement firsthand with acute patient care, Dr. H. H. Marsh, Clinical Pathologist at the Wesley Medical Center in Wichita discussed fluid and electrolyte balance and blood gases with a facility rarely encountered. His discussion was received enthusiastically by the audience, a phenomenon which one does not always achieve with this subject. With a discussion of osmolarity and relative hypovolemic hypotension, Dr. Marsh discussed the fluids most reasonably used for correction of osmolitis and volume deficit. In the average depressive overdose he emphasized that the pH abnormalities are secondary to acute respiratory failure, as well as metabolic acidosis secondary to anaerobic metabolism in the presence of hypoxemia. "Don't treat the metabolic component first," he strongly urged, "treat the respiratory component by bettering ventilation and improve the  $PO_2$ . With better oxygenation the metabolic component of the acidosis disappears." Other problems discussed were the hazards of hyperventilation with consequent acute respiratory alkalosis. In summarizing, he urged, "Treat the altered physiology, not the number, and when you treat, go gently in the right direction after careful consideration of the genesis of each abnormality? Know the reliability of your laboratory. If accurate electrolytes and blood gases are not performed, don't order them."

J. Neal Middelkamp, M.D., of the Department of Pediatrics of Washington University, discussed the diagnosis and clinical management of several commonly encountered poisonings in children. Concerning the problem of hydrocarbon ingestion, Dr. Middelkamp indicated that except for instances where halogenated or aromatic hydrocarbons such as carbon tetrachloride or tricresylorthophosphate are ingested, lavage is controversial due to the increased possibility of aspiration. Hydrocarbon pneumonitis may be more severe than the ingestion alone. The use of steroids, he felt, was contro-

sial but probably of value in fulminating cases. The immediate treatment of alkali ingestion and the sequelae were discussed. The treatment of salicylate intoxication in children was presented in considerable detail, with treatment divided into mild, moderate and severe intoxication. Dr. Middelkamp urged that blood levels for salicylates and electrolytes were extremely important. They should be repeated frequently during the acute course. In addition to the correction of acidosis, alkalinization of the urine to increase clearance was discussed.

John J. Garrett, M.D., Associate Professor of Medicine at St. Louis University, contributed observations from his experience with the treatment of sedative drug intoxication. While Dr. Garrett is involved with the hemodialysis unit, he emphasized that the increasing trend is toward symptomatic and supportive care rather than turning early to hemodialysis as a modality of treatment of drug overdose. Several cases illustrating the proper approaches to treatment were presented.

The treatment of pesticide intoxication was discussed by Dr. Eric G. Comstock, Executive Director, American Academy of Clinical Toxicology. A case report of Ethion poisoning in a child was presented to demonstrate the treatment of a typical case of organo-phosphate ester intoxication. Titration of the atropine dosage must be carried out carefully and under the continuous supervision of a physician. Routine orders for atropine cannot be left in the hands of the nursing staff. There appears to be no practical limit to the dose of atropine that can be tolerated so long as the clinical responses of the patient are carefully observed and atropine administration discontinued with the early signs of atropine intoxication. The relative effectiveness of proto-PAM for various insecticides was discussed. Both proto-PAM and atropine have a role in the management of these cases. Treatment of chlorinated hydrocarbon insecticide poisoning was mentioned only briefly since this has been, in his experience, a relatively rare clinical phenomenon.

Substances of abuse were discussed by Robert L. Devetski, M.D., of Rush Presbyterian-St. Luke's Hospital in Chicago. Based upon his experience in Chicago, as well as with hospitals in smaller communities, Dr. Devetski discussed the relative incidence of drug abuse problems. Alcohol, he emphasized strongly, was the most commonly abused substance and contributes the greatest number of problems both to the society at large and to the medical community. Abused substances were discussed under several pharmacologic groups: hypno-sedatives, hallucinogens, narcotics, 'intoxicants', and other substances.

The final presentation was made by John Doull, M.D., Ph.D., Professor of Pharmacology and Toxicology at the University of Kansas. Expected symptomatology corresponding with observed percentage saturation of blood with carbon monoxide was presented with a general guide to treatment and interpretation of laboratory findings. Dr. Doull then continued to discuss a number of toxic metals, including mercury, lead and iron. Several substances used therapeutically as chelating agents were described and their relative effectiveness for various metals discussed. BAL, EDTA, cupramine and deferoxamine were considered.

After the final paper, the training program was adjourned briefly and reconvened for supper in the Medical Society dining room. After supper, several of the speakers remained to engage in informal discussions with the audience concerning problems of specific toxic substances and their clinical management. The most generally agreed upon observation by both the audience and the speakers was that one day is simply not sufficient for an adequate introduction to the treatment of acute intoxication without serious omissions.

While this was the third training program presented by the Academy, it was the first to be presented without association with another meeting. Sixty-four attended the program. For the first time a printed training manual was distributed at the time of the meeting which contained the complete texts of approximately 75% of the papers presented. A questionnaire calling for program evaluation was distributed. Thirty-nine questionnaires were returned. Each participant was asked to evaluate each speaker in terms of presentation and content separately. The responses to several questions are summarized in the table. Eighty percent believed the technical level to be just right and twenty percent believed the program to be too simplified. Eight percent would have preferred a two-day presentation. Ninety-five percent answered that an emergency treatment manual is needed. 100% of those responding agreed to the need for an Emergency Room manual for rapid identification of toxic substances. Eighty-three percent agreed that there existed a need for a national emergency consultation center available for telephone guidance twenty-four hours a day. Seventeen of those attending indicated that they would attend a one-week training program given at a center where emergency and intensive care treatment is in process. Overall course evaluation by the several professional groups is presented in the table.

RESULTS FROM THE 34 RETURNED QUESTIONNAIRES

<u>M.D.'s</u>	<u>Nurses</u>	<u>Others</u>	<u>Total No.</u>	<u>Percent</u>	
0	0	0	0	0	Program too technical.
6	8	3	17	80	Technical level just right.
2	1	1	4	20	Program too simplified.
3	2	2	7	20	One day program preferred.
10	10	7	27	80	Two day program preferred.
14	14	9	37	95	ER treatment manual needed.
1	0	1	2	5	ER treatment manual not needed.
15	13	8	36	100	ER lab manual needed.
0	0	0	0	0	ER lab manual not needed.
9	12	8	29	83	National Emergency Consult. Center
4	1	1	6	17	No
5	9	2			Extended Course
1	3	0			1 week
1	0	0			2 weeks
					4 weeks

REGISTRATION

One Day Intensive Training Program: Treatment of Acute Intoxication

St. Louis, Missouri, March 6, 1971

Participants by State

Arkansas	1
Colorado	2
Connecticut	1
Florida	1
Illinois	17
Indiana	1
Iowa	5
Kansas	4
Missouri	26
Nevada	1
New Jersey	1
New York	1
Ohio	5
Oklahoma	1
Pennsylvania	1
Tennessee	1
Texas	1
Wisconsin	1

Originating from 18 states, 64 persons attended the training program.

## REGISTRATION

### One Day Intensive Training Program: Treatment of Acute Intoxication St. Louis, Missouri, March 6, 1971

Phillip Anderson, M.D., Chicago, Illinois  
Romeo T. Bachand, Jr., Menomonee Falls, Wisconsin  
Violet Benedict, Des Moines, Iowa  
Sherry Benway, Wichita, Kansas  
Sister Anne Besand, Kansas City, Missouri  
Allen P. Borger, M.D., Groton, Connecticut  
Nancy Brenner, Mount Prospect, Illinois  
Fred W. Clayton, D.V.M., Columbia, Missouri  
Eric G. Comstock, M.D., Houston, Texas  
William R. Conley, St. Louis, Missouri  
Basil M. Continelli, B.S., Buffalo, New York  
Robert L. Devetski, M.D., South Bend, Indiana  
Michael Donovan, Columbus, Ohio  
John Doull, M.D., Kansas City, Kansas  
Phillip S. Duke, Ph. D., Chicago, Illinois  
Raymond T. Eklund, M.D., Las Vegas, Nevada  
Alice M. Fleisch, R.N., St. Louis, Missouri  
George E. Gantner, M.D., St. Louis, Missouri  
Essie Garrett, R.N., Kansas City, Missouri  
John J. Garrett, M.D., St. Louis, Missouri  
Louis Gdalman, Chicago, Illinois  
Vernon A. Green, Ph. D., Kansas City, Missouri  
Louise Grove, Des Moines, Iowa  
Gordon L. Gudakunst, Columbus, Ohio  
Gordon W. Hall, M.D., Rockford, Illinois  
Jacqueline Hall, R.N., St. Louis, Missouri  
Susanne E. Hall, M.D., Rockford, Illinois

Joann Henry, St. Louis, Missouri  
Barbara K. Herrick, Des Plaines, Illinois  
Patricia Hickman, Memphis, Tennessee  
Forrest Hinton, Immokalee, Florida  
Frank D. Hiter, Chicago, Illinois  
Bruce Janiak, M.D., Cincinnati, Ohio  
Patricia Jenkins, St. Louis, Missouri  
K. Richard Knoll, Little Rock, Arkansas  
Kenneth J. Langlois, Miami, Ohio  
Catherine F. Lauder, Chicago, Illinois  
Sister Mary Alexius Lennon, R.S.M., St. Louis, Missouri  
Arthur M. Lindsay, M.D., Springfield, Illinois  
Dr. Litjestrang, St. Louis, Missouri  
L. E. Loveless, Ph. D., St. Louis, Missouri  
Leo Lowbeer, M.D., Tulsa, Oklahoma  
Charles E. Marsh, M.D., Topeka, Kansas  
H. H. Marsh, M.D., Wichita, Kansas  
William C. McCarthy, M.D., Pittsburgh, Pennsylvania  
J. Neal Middelkamp, M.D., St. Louis, Missouri  
Catherine S. Moon, R.N., Chicago, Illinois  
Levon Morgan, Springfield, Missouri  
George E. Murphy, St. Louis, Missouri  
Gary D. Osweiler, D.V.M., Ames, Iowa  
E. Joan Peterson, M.D., Bloomfield, New Jersey  
Elizabeth Poffenberger, Des Moines, Iowa  
Audrey L. Preisendorf, Denver, Colorado  
Lorraine, Rickelman, R.N., Clayton, Missouri  
Joyce Roth, Columbus, Ohio  
Ilene Somners, St. Louis, Missouri  
Jacqueline Sowell, R.N., St. Louis, Missouri  
Mark Thoman, M.D., Des Moines, Iowa  
Harry J. Umlauf, Jr., M.S., Denver, Colorado  
Lois V. Wadlington, R.N., Chicago, Illinois  
Anne Webb, R.N., Missouri  
Robert Weinhaus, M.D., St. Louis, Missouri  
Cynthia Zeiders, R.N., Missouri  
Dr. Zeiders, Missouri