

Medicine Aboard the Mary Rose

Medicine Aboard the Mary Rose

Katelyn Houston

Towson University

TSEM 190: Honors Towson Seminar

Dr. McAlister

11-30-2023

Medicine Aboard the Mary Rose

Introduction

The Mary Rose was a warship built in 1510 commissioned by Henry VIII in an effort to build the English Royal Navy. Throughout her 34 years of usage The Mary Rose fought in many battles, yet she typically stayed in or close to English waters, scarcely remaining at sea for longer than two-to-three-week periods (Knighton and Loades, 2012). During the Battle of The Solent between the French and English on July 19, 1545, the Mary Rose suddenly sank (Knighton and Loades, 2012). The cause of her sinking has been argued amongst historians for centuries. According to a correspondence written on July 23, 1545, by Francois van der Delf, an ambassador to Charles V, the Mary Rose had fired her guns from the starboard side of the ship – the right side - and as the vessel attempted to turn it keeled over due to a sudden, strong gust of wind (Van der Delf, 1545). The ship's lowest row of gunports remained open from their recent firing and when the gunports tipped below the surface of the water the ship flooded causing her to sink (Knighton and Loades, 2012). Historians have also argued that the Mary Rose had been destabilized after a renovation in 1535. The renovation increased the capacity of the Mary Rose allowing her to carry more guns and men, while in turn decreasing her durability and sturdiness (Knighton and Loades, 2012). Another argument states that the captain of the Mary Rose attempted to turn the ship too quickly to show off his skill to King Henry VIII who had been observing the battle from shore (Knighton and Loades, 2012). Overall, it has been concluded that The Mary Rose presumably sank due to a mixture of open gun ports, poor redesign leading to instability, the weather conditions, and potentially human error (Knighton and Loades, 2012).



Figure 1: The Cowdray Engraving depicting the Battle of the Solent on July 19, 1545. Seen in the center of the Solent is a sunken Mary Rose (Mary Rose Trust, n.d.).

Medicine Aboard the Mary Rose

After her sinking in 1545 she laid in the Solent, an English strait between the city of Portsmouth and the Isle of Wight, for 437 years until her remains were raised in 1982. The mud and clay of the Solent kept the ship's starboard side well preserved, leading to the gathering of 19,000 artifacts from the wreck site.



Figure 2: Painting of the Mary Rose c. 1520 (Westphalen, 2023)

Among these many artifacts was a surgeon's chest found in the surgeon's cabin, as well as many well-preserved skeletal remains. There are little to no surviving texts detailing the exact practices of sea-surgeons during the 16th century (Castle and Kirkup, 2005), constituting the Mary Rose as a vital resource in the understanding of Tudor medicine. Through the analysis of previously practiced medical theories, human remains, and artifacts from the surgeon's cabin, the Mary Rose is an incredibly useful tool in the understanding of Tudor medicine and medicinal practices at sea, revealing the beliefs surrounding medicine, ailments sailors faced, and the practices used to treat individuals during the 16th century.

The surgeon's chest found at the wreck site of the Mary Rose contained 64 artifacts important to understanding the medical practices of the 16th century (Westphalen, 2023). Included in the chest were nine containers of ointments and five ceramic jars. Within the jars archeologists found evidence of pepper, frankincense, belladonna, linseed oil, henbane, quince, and fern oil. Additionally, archaeologists recovered a bloodletting bowl, spatulas to apply ointments, three syringes, a variety of surgical instruments, eight bandage rolls, and many other items (Castle et al., 2005; Westphalen, 2023). Examining the artifacts found in the surgeon's chest as well as the

Medicine Aboard the Mary Rose

remains of the crew of the Mary Rose can help historians understand what Tudor physicians and sea-surgeons believed and practiced during the 16th century. The skeletal remains can illuminate upon what types of diseases sea-surgeons would face while aboard ships and what types of health issues were common during the Tudor Period.

While other artifacts such as the types of medications found aboard can showcase how sea-surgeons practiced medicine and provide information on a topic of which little documentation has been recorded.



Figure 3: The surgeon's chest and some of its contents (Bauer, S., Schlünder, M., & Rentetzi, M., 2020)

Galenic Pharmacology

Among the many artifacts found in the surgeon's chamber aboard the Mary Rose was a blood-letting bowl. The practice of bloodletting is rooted in the belief in Galenic pharmacology. Galenic Pharmacology, a practice based off the theories of Galen Pergamon (born 129 C.E). Pergamon's theories state that the universe was made of four irreducible elements, fire, air, earth, and water (Teigen, 1987). These elements had four qualities which included being either hot, dry, cold, or moist. In terms of health and medicine, it was believed that the body was made up of four humors which corresponded with the four elements and qualities. The four humors were blood, yellow bile, black bile, and phlegm. Blood was considered warm and was linked with air. Yellow bile was warm and linked to fire. Phlegm was believed to be of the water element and the cold quality. Lastly, black bile was of both cold and dry qualities and correlated with the earth (Freedman, 2008). Treatments and any information involving health and disease revolved around the four humors. It was believed that diseases were a result of a humoral imbalance. In order to treat the disease, sea-surgeons would need to bring the humors back to their proper equilibrium

Medicine Aboard the Mary Rose

(Freedman, 2008). Said proper equilibrium depended on each person and varied on an individual basis. It was believed that individuals had a more predominant humor or combination of humors in their body which was known as a temperament. One's temperament was influenced by their character, mood, and race. A person with a melancholy temperament would have a predominance of black bile. Similarly, an individual who favored blood could have a sanguine personality (Freedman, 2008). When practicing Galenic pharmacology, the rules surrounding humors were adjusted based on temperament (Freedman, 2008).

The four humors, qualities, and elements were how physicians would treat disease. It was believed that treatments needed to have the qualities opposite to the disease. For example, peppercorns were considered hot and dry so they would be used to treat illnesses that were cold and wet, such as asthma or removal of excess phlegm (Freedman, 2008; Teigen, 1987). This action was taken to rebalance the humors back to their proper equilibrium (Freedman, 2008).

Lancets and a bloodletting bowl were found among the supplies of the sea-surgeon aboard the Mary Rose. A lancet is a small surgical tool that was used to bleed patients (Castle et al., 2005). Bloodletting was a practice used to remove an excess of the humor or humors that were believed to be causing an individual's ailment. It could be a treatment for typhus, general fevers, yellow fever, infection, and the plague (Castle and Kirkup, 2005). The presence of both a bloodletting bowl and a lancet as well as jars of peppercorn reveal that Tudor surgeons believed in, and practiced techniques derived from galenic pharmacology.



Figure 4: Bloodletting bowl found in the surgeon's chest (Mary Rose Trust, n.d.). Image owned by the Mary Rose Trust.

Medicine Aboard the Mary Rose

Human Remains

The human remains found at the wreck site of the Mary Rose give a detailed look into what life was like for the crew both aboard the ship and on land. The bodies provide an excellent glimpse into what types of issues the ship surgeon would encounter aboard the Mary Rose. From the wreck site of the Mary Rose there were 119 individuals recovered and of those there were 92 almost fully complete skeletons (Stirland, 2012). There were some skeletons which showed evidence of multiple kinds of fractures, such as nasal, cranial, lower limb, rib, and avulsion fractures. Fractures were a common workplace hazard aboard ships. Fractures could be caused from falls on slippery decks, off masts and rigging or even due to crushing from heavy materials on board (Castle and Kirkup, 2005).

Avulsion fractures are a type of fracture that occur when a fragment of bone is torn off at the site of attachment to a tendon or ligament due to trauma (Stirland, 2012). Two of the most common avulsion fractures seen among the remains of the crew occurred at either the top of the tibia where it attaches to the patella tendon or at the fifth metatarsal (Stirland, 2012). These can occur when someone jumps or falls onto an unstable surface, such as a ship's deck (Stirland, 2012). These fractures are incredibly unique to mariner life and would be something that the ship surgeon would have to know how to fix specifically.

Among other things, the bodies recovered also showed some signs of arthritis as well as back, knee and shoulder problems (Stirland, 2012). When analyzing a few of the spines found, issues can be noted. One man would have lived with lasting back pain because his spine locked together in certain areas due to ossified spinal ligaments (Stirland, 2012). This condition is depicted in figure five (Stirland, 2012). The crew of the Mary Rose also had high occurrences of os acromiale. Os acromiale occurs when the acromion process is not fused with the scapula, as

Medicine Aboard the Mary Rose

observed in figure six. This condition is rare and is only seen in 3-6% of modern populations. However, among the 52 complete pairs of scapulae found at the wreck site, ten exhibited os acromiale, providing the crew with a 19% occurrence rate. This is far higher than the modern average and is typically equated to the use of long bows during the Tudor period (Stirland, 2012).

Historians have identified three broad categories of ages among the crew of the Mary Rose. Young adults ranged from about 18 to around 30. Of the remains found, there were 54 young adults. Middle adults spanned from 30 to about 40, with 15 crew members falling into this

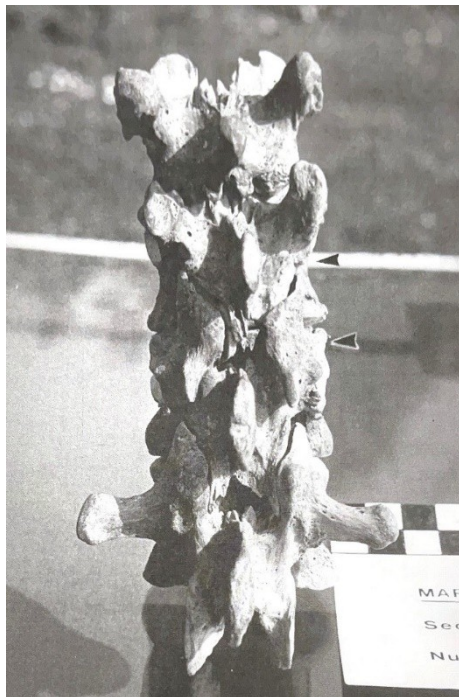


Figure 5: Ossified spinal ligaments. The ossified ligaments are indicated by the arrows (Stirland, 2012)

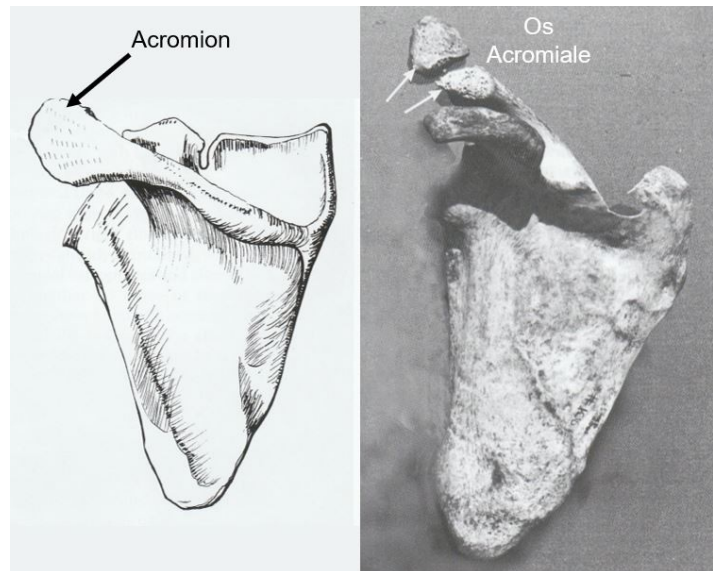


Figure 6: Right scapula with normal acromion (left) compared to the right scapula of a crewman from the Mary Rose with os acromiale (right) (Westphalen, 2023).

category. Finally, old adults would have been any crew member over the age of 40. Currently, only one crew member has been identified as an old adult (Stirland, 2012). The presence of orthopedic diseases among the largely young remains exemplifies the physically strenuous work and lifestyle of sailors in the 16th century.

Medicine Aboard the Mary Rose

The use of heavy manual labor and specific occupational practices left an impact on the skeletons of the crew. Due to this lifestyle and the slight prevalence of arthritis and other orthopedic diseases, the ship-surgeon would have had to know how to treat or relieve these ailments to the best of their ability so the men could be as healthy as possible. Evidence of this is shown with the finding of frankincense and analgesics in the surgeon's chest. Frankincense is a resin that was used to combat the effects and pains of arthritis (Castle and Kirkup, 2005).

The skeletons of the Mary Rose also reveal the types of diseases a ship-surgeon would have had to know how to treat and manage. Many of the skeletons showed evidence of diseases derived from malnutrition and a prolonged lack of essential vitamins. The main diet of the men on the Mary Rose included bread, cheese, butter, bacon, salted beef, dried or salted fish and beer (Knighton and Loades, 2012). The absence of fresh fruits or vegetables caused a depletion of essential vitamins and nutrients among the crew. There were many skeletons showcasing evidence of diseases caused by the lack of vitamin D in one's diet. As illustrated in Figure seven, many individuals had evidence of healed

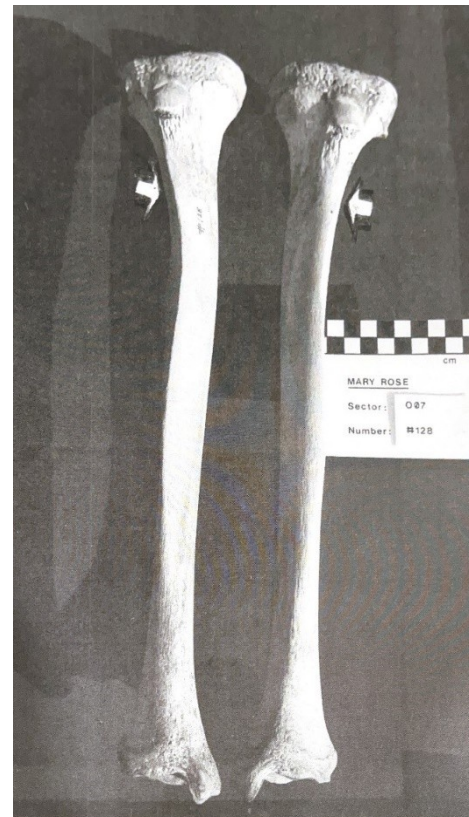


Figure 7: Tibial bones with evidence of healed rickets. The bowing at the top of the bones is indicative of rickets (Stirland, 2012)

childhood rickets as well as osteomalacia which is the adult form of the disease (Stirland, 2012). Rickets and osteomalacia cause the softening and weakening of bone tissue. Vitamin D is necessary for the absorption of calcium and phosphorus, both essential minerals needed for bone strength. Not having enough vitamin D causes individuals to be unable to maintain the proper

Medicine Aboard the Mary Rose

calcium and phosphorus levels within the bones, leading to softening and weakness (Wharton and Bishop, 2003). Osteomalacia occurs when adults lack vitamin D, whereas rickets is seen in children (Wharton and Bishop, 2003).

Evidence of scurvy, which is caused by a depletion of vitamin C, was also found on some skeletons (Stirland, 2012). While scurvy can be difficult to detect in skeletal remains because the disease primarily impacts soft tissue, some evidence is detected. Remnants of blood clots along bones and pitting of eye sockets, depicted in figures eight and nine respectively, are indicative of scurvy (Stirland, 2012). Symptoms of scurvy include spots, weakness, itching, loose teeth, and rotting gums (Castle and Kirkup, 2005). It has been stated in texts by sea-surgeons that scurvy was one of the most common diseases seen (Evans & Read, 2017). Because it was seen so often,

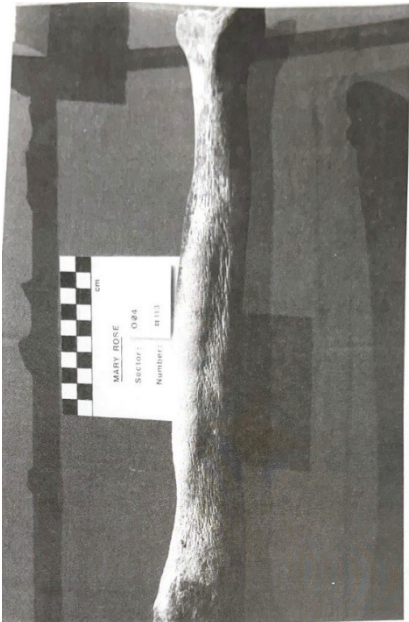


Figure 8: Tibia showing evidence of blood clots, indicating that this individual contracted scurvy. The ridging along the center of the bone suggests a previous presence of blood clots (Stirland, 2012)



Figure 9: Skull of a crew member who is presumed to have had scurvy. The pitting in the eye sockets is evidence of such (Stirland, 2012).

sea-surgeons would have had to know and be familiar with the signs, symptoms, and treatments

Medicine Aboard the Mary Rose

of scurvy. Lasting evidence of these diseases provides historians with information about what ailments individuals faced during the Tudor period.

Medicines within the chest

Multiple jars and containers of medicines and ointments were found in the surgeon's chest and throughout the cabin at the wreck site of the Mary Rose. There were nine jars filled with ointments, five ceramic jars which could have contained linseed oil, resins such as frankincense, henbane, quince, or belladonna, 19 wooden canisters, and eight bandage rolls (Castle et al., 2005; Westphalen, 2023).

It is known that one of the nine containers of ointments held beeswax and poppy oil. During the 16th century a sea-surgeon could combine beeswax with ointments to make a substance known as ceratum. The ceratum would be melted, applied to a patient's wound or burns as a liquid and would harden to become a solid barrier for the vulnerable wound (Castle et al., 2005). Burns were a very common occurrence among gunman and those who were working with any flammable or scalding substance (Castle and Kirkup, 2005). The beeswax could be mixed with rosin oil and a multitude of different minerals, resins, or other oils to make ointments that would treat varying ailments (Castle et al., 2005). The aforementioned poppy oil was used to treat inflammation and provided pain relief to the patient (Castle and Kirkup, 2005). Sulfur and zinc could be included in an ointment to create



Figure 10: Wooden medical containers discovered in the surgeon's chest aboard the Mary Rose. These would have contained ointments, ingredients and other necessities required by the surgeon (Mary Rose Trust, n.d.). Image owned by the Mary Rose Trust

Medicine Aboard the Mary Rose

an equivalent to calamine lotion. Copper salt and sulfur could be mixed with beeswax to create an ointment that treated necrotic skin ulcers (Castle et al., 2005).

Discovered in one of the five ceramic jars, linseed oil was listed as an ingredient in an ointment to treat the itching associated with gonorrhea (Castle and Kirkup, 2005). As discussed previously, frankincense was used as an anti-inflammatory remedy. Frankincense was also included in mixtures made to stop bleeding and was heavily involved in the treatment of wounds and wound care (Castle and Kirkup, 2005). The resin was an ingredient in oils made to heal muscle wounds and treat muscle cramps (Castle and Kirkup, 2005). Henbane was used for pain relief as well as an agent to put patients to sleep when combined with opium and belladonna (Castle and Kirkup, 2005). Finally, syrups of quince were used as a method of treatment for diarrhea (Castle and Kirkup, 2005).

An especially important find among the artifacts was the discovery of eight bandage rolls. The bandages consisted of linen that had been saturated with oils and resins. They were essentially pre-made plasters (Castle et al., 2005). Plasters were used to treat burns, contusions and fractures and are what modern day physicians would associate with casts (Castle et al., 2005). Pine oleoresins were added to the linen to aid in the healing of burns because pine resin was predominately used in their treatment (Castle et al., 2005; Castle and Kirkup, 2005). The presence of pre-made plasters indicates that these were common injuries faced by the crew and the surgeon encountered them regularly. It can be understood that surgeons were prepared and knowledgeable in what issues they were most likely to face while at sea and what equipment and resources they needed to remedy said issues.

The artifacts from the surgeon's chest aboard the Mary Rose provide details into what Tudor sea-surgeons would have used to treat illness and disease during times at sea. The artifacts also

Medicine Aboard the Mary Rose

provide information on what sea-surgeons believed to be important and necessary tools to have on ships when they ventured out to sea.

Conclusion

The surgeon's chest aboard the Mary Rose was a revolutionary finding for the understanding of seafaring Tudor medicinal practices. Between the artifacts of medicines, containers, supplies, and human remains, a world of information has been revealed to historians about life aboard ships in Tudor England that was previously unavailable. Healing and treating ailments are innately human practices which continue to modern day. Understanding medical treatments and attitudes from the past can help people better understand the practices of today. Even with the incredible advancements of modern medicine there are many practices, principles, and medical ingredients that stem from the Tudor period and before. Having a better understanding of medicine in the past can lead to a better understanding of medicine in the present.

Medicine Aboard the Mary Rose

Bauer, S., Schlünder, M., & Rentetzi, M. (2020). *Boxes: A field guide* [photograph of surgeon's chest]. Mattering Press. <https://doi.org/10.28938/9781912729012>

Castle J., Derham B., Montagu J., Wood R., & Hather J. (2005). The Contents of the Barber Surgeon's Cabin. In Gardiner, J., Allen, M. J., Alburger, M. A., & Mary Rose Trust (Eds.). *Before the mast: Life and death aboard the Mary Rose* (4th ed., pp.189-225).

Castle J. & Kirkup J. (2005). Medicine Aboard. In Gardiner, J., Allen, M. J., Alburger, M. A., & Mary Rose Trust (Eds.), (2005). *Before the mast: Life and death aboard the Mary Rose* (4th ed., pp.172-189).

Evans J. & Read S. (2017). *Maladies & Medicine: Exploring Health & Healing, 1540-1740*. Pen & Sword History.

Freedman, P.H. (2008). *Out of the East: spices and the medieval imagination* (N. Ovedovitz (Ed.)). Yale University Press

Knighton, C.S. & Loades, D.M. (2002). *Letters from the Mary Rose*. Sutton.

Mary Rose Trust (n.d.). *Meet the surgeon*. [Photograph of bloodletting bowl]. The Mary Rose. Retrieved November 2, 2023, from <https://maryrose.org/meet-the-surgeon/>

Mary Rose Trust (n.d.). *Meet the surgeon*. [Photograph of wooden medical containers]. The Mary Rose. Retrieved November 2, 2023, from <https://maryrose.org/meet-the-surgeon/>

Mary Rose Trust (n.d.). *The Cowdray Engraving*. [Image of The Cowdray Engraving] The Mary Rose. Retrieved November 30, 2023, from <https://maryrose.org/blog/historical/guest-blog/the-cowdray-engraving/>

Medicine Aboard the Mary Rose

Stirland, A. (2012). The Men of the Mary Rose. In C. A. Fury (Ed.), *The Social History of English Seamen, 1485-1649* (pp. 47–74). Boydell & Brewer

Stirland, A. (2012). The Men of the Mary Rose [Photograph of a pair of tibias]. In C. A. Fury (Ed.), *The Social History of English Seamen, 1485-1649* (pp. 47–74). Boydell & Brewer.

Stirland, A. (2012). The Men of the Mary Rose [photograph of a singular tibia]. In C. A. Fury (Ed.), *The Social History of English Seamen, 1485-1649* (pp. 47–74). Boydell & Brewer.

Stirland, A. (2012). The Men of the Mary Rose [Photograph of a spine]. In C. A. Fury (Ed.), *The Social History of English Seamen, 1485-1649* (pp. 47–74). Boydell & Brewer.

Teigen, P. M. (1987). Taste and Quality in 15th- and 16th- Century Galenic Pharmacology. *Pharmacy in History*, 29(2), (pp. 60–68).

Van der Delft (1545) in Knighton, C.S. & Loades, D.M. (2002). *Letters from the Mary Rose*. Sutton

Wharton, B., & Bishop, N. (2003). Rickets. *Lancet*, 362(9393), 1389-1400.

[https://doi.org/10.1016/S0140-6736\(03\)14636-3](https://doi.org/10.1016/S0140-6736(03)14636-3)

Westphalen, N. (2023, March 29). *Tudor Naval Medicine 1485 – 1603: Part one*. JMVH.

<https://jmvh.org/article/tudor-naval-medicine-1485-1603-part-one/>

Westphalen, N. (2023, March 29). *Tudor Naval Medicine 1485 – 1603: Part one* [photograph of scapula comparisons]. JMVH. <https://jmvh.org/article/tudor-naval-medicine-1485-1603-part-one/>

Westphalen, N. (2023, March 29). *Tudor Naval Medicine 1485 – 1603: Part one* [photograph of the Mary Rose]. JMVH. <https://jmvh.org/article/tudor-naval-medicine-1485-1603-part-one/>