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Blowing smoke up your arse: Drowning, resuscitation and public health in eighteenth-century Venice

Today, “blowing smoke up your arse” is a metaphor which refers to offering insincere compliments. In the eighteenth century, by contrast, it was a literal and widespread practice which gained traction in many European cities as part of a procedure to resuscitate people who had fallen into water and appeared to have drowned. In 1771, for instance, a surgeon petitioned Venice’s Health Magistracy, the *Provveditori alla Sanità*, to request a reward for having put the method – as set out by the Magistracy itself – into practice. Giuseppe Borghi reported that on the evening of December 12, 1771: “I assisted the person of Francesco Bon, an inhabitant of the parish of San Pantalon, who had been pulled out of the canal of San Silvestro half-alive and foaming at the mouth; he was transferred to the bakery of the Madonnetta [in the parish of] San Polo, where I put into practice all of the means prescribed by the Most Excellent Health Magistracy, that is to say, the introduction of tobacco smoke into the anus, the insufflation of the lungs with air, massage, and after the repetition of these aids he started little by little to recover, and so I carried out a bloodletting which improved things further.”¹ Borghi’s actions corresponded precisely with the resuscitation method which had been set out in a decree issued by the Magistracy on December 1, 1770.² This decree built on a previous decree of December 1768, and the method was reiterated in legislation issued in May 1778 and February 1795 *more veneto* (the Venetian year ran from March to February).³ As we shall see, resuscitation came to be practiced both in the city of Venice and across its empire.

Borghi’s use of a tobacco smoke enema as a resuscitation technique represented an accretion of many traditions and discourses. Enemas and clysters had been widely used to promote and restore health since ancient times and continued to be a common treatment in the early modern period. Anal insufflation appears in European visual sources from the thirteenth century onwards.⁴ The earliest known reference to insufflation as a resuscitation technique is in a pediatric manual published in 1472, in which the Paduan physician Paolo Bagellardo suggested blowing into the mouth or anus of a newborn infant if it was not breathing but was not cold or blue.⁵ The use of anal insufflation – with air – on the drowned was reported in several later seventeenth-century texts.⁶ The connection between insufflation

and tobacco also developed in the seventeenth century. The medicinal uses of tobacco had been widely discussed by European medical writers from the second half of the sixteenth century onwards, notably in Nicolás Monardes' *Historia medicinal de las cosas que se traen de nuestras Indias Occidentales* (1565–1574), which was translated into numerous languages and circulated widely.⁷ Tobacco became a mass-market commodity in the early seventeenth century when the quantity of tobacco which was imported into Europe increased dramatically.⁸ Its accessibility – and attention to commercial opportunities – fueled continued exploration of medical uses. In 1639, for example, John Woodall, Surgeon General of the East India Company, included a six-page illustrated account of the “Enema fumosum; or a fumous glister” in his surgical manual, describing it as “a new found Art of giving a Glister of smoke ... into any mans body, very convenient in many occasions, ... being a most profitable instrument, and Art for the way of curing many grievous infirmities.”⁹

Anal insufflation, tobacco smoke, and the drowned finally came together in the first half of the eighteenth century in texts by several French authors, notably René-Antoine Réaumur and Jacques Bénigne-Winslow.¹⁰ In 1742, the prominent French physician Jacques-Jean Bruhier translated the latter's text from Latin to French and added a commentary, writing that: “perhaps the most efficacious Method that can be taken with a drown'd Person, is by Means of a proper Pipe to blow the Smoke of Tobacco into his Intestines: There have been several Instances, at once of the speedy and happy Effects of this Smoke on drown'd Persons.”¹¹ In an expanded edition of 1745, Bruhier reported one such happy case, the events of which had unfurled at Passy near Paris, where a woman fell from a ferry crossing the Seine. When she was pulled from the water, a passing soldier comforted her distressed husband, “for that his Wife should soon come to Life; then, giving him his Pipe, bid him put the End into her *Anus*, and blow the Smoke up with all his Might, putting the Bowl of the Pipe covered with a pricked Paper into his Mouth, the fifth Puff made the Woman's Belly grumble very loud, she threw up some Water, and then recovering her Senses she sat up an End.”¹²

Such stories, and the medical analysis of why the method worked which accompanied them, led to the promotion of resuscitation attempts by civic authorities in France. In 1755, the magistrates of Lille issued detailed instructions on the actions – including anal insufflation – which were advised for “people who have fallen in the water and are thought to be drowned.”¹³ Bruhier's writings also

circulated widely beyond France, where they were summarized, cited and discussed in printed and manuscript texts in several languages. Organized efforts to promote resuscitation spread beyond France, notably to Amsterdam where the *Maatschappij tot Redding von Drenkelingen* (Society for the Rescue of the Drowned) was established in 1767. In autumn 1767, the Society awarded a reward for the first time, for the rescue of a worker who had been revived with an anal insufflation of tobacco smoke.¹⁴ A few months later, on July 1, 1768, a 34-year-old physician, Francesco Vicentini, presented a text on “the possibility of reviving some drowned people even if they seem to be dead” to one of Venice’s Health Magistrates.¹⁵ In December 1768, the Health Magistrates ordered that Vicentini’s text be “printed and distributed so that it becomes universally known.”¹⁶

The development of resuscitation practices in eighteenth-century Europe has been evaluated by a number of scholars.¹⁷ These studies have focused on four issues: how cultural anxieties about sudden death and the certainty of death fueled medical interest in the possibility of resuscitation; how the conceptualization of drowning as suffocation led to the advocacy of particular interventions; how texts and networks diffused medical ideas about drowning and resuscitation across Europe; and how medical debate resulted in political action. With the exception of Anton Serdeczny’s recent study – which highlights the contribution of oral accounts to medical treatises, argues for an important and growing connection between reanimation and the Protestant faith over the course of the eighteenth century, and explores carnivalesque and anthropological influences on resuscitation practices – extant scholarship concentrates on medical ideas and how these ideas prompted political elites to issue legislation.¹⁸

This article takes a fresh approach to drowning and resuscitation by shifting the focus from discourse to experience. This approach is inspired by David Edgerton’s call to pay attention to use and maintenance as well as invention and innovation when analyzing the history of technology.¹⁹ As Edgerton argues, the use of things is much more diffuse and involves far more people than invention or production.²⁰ Drowning and resuscitation were not abstract ideas for eighteenth-century Venetians, and I aim to shed light on their human dimensions and social resonances. Applying a methodology grounded in social and cultural history, I analyze records from the archive of Venice’s Health Magistracy which provide evidence of the profile of drownings and the purchase and use of resuscitation technologies, as well as letters, medical treatises, images and objects which are connected to drowning and practices of

resuscitation. These sources include a pair of bellows which once formed part of one of the resuscitation machines which were used to administer tobacco smoke enemas. I contextualize the four major printed decrees which dealt with resuscitation by drawing on manuscript records of the day-to-day activity of the Magistracy, which comprise decisions taken by the magistrates, documentation which prompted these decisions, petitions, and death registers. In addition, I build on previous analyses of legislation by evaluating the decrees as material texts in order to elucidate how the Health Magistracy used legislation to inform and persuade. I seek to answer two key questions. First, why was there a substantial effort and considerable expenditure by the Venetian government to prevent deaths from drowning from 1768 onwards, given that drownings accounted for a very small proportion of deaths in Venice and its territories? Second, how did the Venetian Republic encourage its subjects to attempt resuscitation? Venice remained one of Europe's largest cities, with a population of around 140,000 people.²¹ I argue that the sustained promotion of resuscitation by its government, which also ruled over a substantial territorial state, cannot be explained with reference to the medical context alone. The advocacy of resuscitation by medical professionals was certainly significant, and the role of medical expertise in performing resuscitations was crucial, but other factors were also at play. The response to this new practice was shaped by the prominence of drowning in local mentalities, the city's commercial ethos and artisanal cultures, a long tradition of public health innovation, and a more immediate intensification of interest in mitigating risks to life. Analyzing the way in which the Venetian Republic implemented its public health strategy on drowning helps us to understand better the intersections between medical, cultural, political and administrative processes in pre-modern public health. By drawing attention to modes of communication, this study also challenges the traditional pre/modern periodization in the history of public health and offers lessons which have relevance for how states and nongovernmental organizations might effectively translate policy into action today.

Mortality and risk

Drownings were recorded in Venice's comprehensive civic death registers which were compiled by clerks employed by the Health Magistracy.²² "Annegato" was the main word used to refer to a drowning;

“affogato” was occasionally used in its place. Some entries in the registers highlighted the circumstances of death instead, explaining how the individual had fallen into water. The registers document how people of all ages and social groups died by drowning, from noblemen and the sons of doctors, to boatmen, builders, clerics, galley slaves, servants and weavers.²³ Analysis of these deaths show that higher status people were less likely to die from drowning than their more lowly counterparts.²⁴ People aged 25–34 died most often from drowning, followed by those aged 15–24, in notable contrast to today’s world, where the highest rates of drowning are for children aged 1–14.²⁵ Mortality was gendered: 83.62 per cent of people who died in water were male. Male youths and adults were at higher risk of drowning because they spent more time on boats than women and children due to gendered occupational activity. Men were also more likely to move around the city in the hours of darkness when the absence of street lighting increased the risk of an accidental fall into a canal, and when there were fewer people on the streets who might effect a rescue. Although the death registers rarely note the exact time at which the death occurred, many entries specify how the deceased had fallen in the water in the evening or at night. The mean frequency of death by drowning across the months of the year was fairly steady, aside from a peak in July.²⁶ Causality was complex: deaths from drowning included homicides, suicides and accidents. Circumstances were also varied. Accidental deaths attributed to drowning involved falls from bridges and boats; falls into wells when fetching water; storms; convicted criminals who died while trying to flee galley service; and inexperienced swimmers.²⁷ Homicides include cases such as Domenico Mazzoleni who was found “drowned with wounds to his throat and head” in October 1771.²⁸ The suicidal intent of the deceased is noted in examples of falls from windows into canals and falls into wells.²⁹ A large proportion of entries simply note that the individual had been “found drowned.” In many cases, the cause of death was unknown, ambiguous or had multiple dimensions, such as when newborn infants were found in the water, or epileptic fits caused falls into the water.³⁰ In some cases, the deceased may have been dead before entering the water.³¹ Drownings were not directly instigated by the state in the eighteenth century. Although drowning had been used as a method of execution in the sixteenth and early seventeenth centuries, notably for heretics, this practice had long ceased both in Venice and other European polities.³²

Did the lagoon environment of the city of Venice elevate the risk of drowning? The physician Eusebio Sguario argued that it did. Writing in 1761, Sguario prefaced his dissertation on “how to revive the submerged” with the comment that “in this city wondrously planted in the sea, and intersected by many canals, the dangers of drowning often befall every order of people.”³³ Scholars have also claimed that deaths from drowning were particularly numerous in Venice due to the prevalence of water.³⁴ As well as canals and the lagoon, the city contained more than six thousand wells and cisterns in public squares and private courtyards.³⁵ But what was the risk of drowning? Recording practices complicate the counting of deaths and analysis of mortality rates. The civic death registers functioned as a narrative record of deaths in the city and were not designed as a tool for statistical analysis of cause of death. Categorization of deaths as drownings requires interpretative judgments. Nonetheless, the physician Francesco Vicentini was willing to make these judgments, and provided tallies of annual deaths from drowning from 1758 to 1767 in his *Memoria* of 1768. These 164 deaths constituted 0.29 per cent of all 56,395 deaths in this ten-year period.³⁶ Vicentini’s criteria for “drowning” are not known, but deaths in water in other years have been counted for the purposes of this study. Analysis of these deaths shows that a similar number and proportion of deaths from drowning occurred prior to and after the publication of Vicentini’s treatise.³⁷ These figures highlight that only a small number of people died from drowning each year, and that these deaths were a very small proportion of total deaths. Variations between individual years reflect the inherent unpredictability of accidental deaths as well as how the total deaths in a given year could be substantially affected by the incidence of contagious diseases like smallpox and tuberculosis. Comparisons in the number of deaths from drowning can be drawn between Venice and other European cities. There were 5260 deaths from drowning in London between 1654 and 1735, a mean of 64.94 per year.³⁸ In Lille, there were 431 deaths from drowning between 1713 and 1791, a mean of 5.53 per year.³⁹ Population and cause of death figures must be treated as approximate; nonetheless, the crude death rates from drowning per 100,000 inhabitants can be calculated at 0.128 (Venice), 0.119 (London) and 0.096 (Lille).⁴⁰ The death rate from drowning is only marginally higher in Venice, where recording practices were more rigorous than elsewhere. Scholars of London’s bills of mortality repeatedly highlight under-registration, and neonatal drownings were excluded from the Lille

figures. We may therefore conclude that the visibility of water in Venice led figures like Sguario to perceive an exaggerated level of risk from drowning.

<<Figure 1 here>>

Certain features of the city mitigated the risk of drowning. Some canals were relatively shallow, especially at low tide, and the stone steps which punctuated the streets which ran alongside a number of the wider canals not only facilitated the offloading of boats but also might have helped someone who had fallen in the water to climb out. Venice, moreover, was a densely populated city and an accidental fall into a canal was likely to be witnessed by neighbors or passers-by. The risk was also mitigated by the ability to swim. In early modern Europe as a whole, few people could swim, and swimming was often framed as an elite activity; in Baldassare Castiglione's *The Courtier* (1528), for instance, swimming was presented alongside hunting and tennis-playing as one of a group of "manly" and "noble" activities.⁴¹ But swimming was a more common activity in Venice compared to elsewhere. In the series of eighteenth-century watercolors depicting the clothing and pursuits of the Venetians which was commissioned by the noble Pietro Gradenigo from the artist Giovanni Grevenbroch, the image labelled "training for children" depicts eight naked male youths (and a dog) enjoying themselves in and around the water (Figure 1). Several of them are swimming, some of them using buoyancy aids, and another is diving from a bridge. The image's caption notes that "plebeian children learn the art of swimming from their parents at a young age," so that later they are "perfectly resistant to any risk;" and that "swimming has been recognized as useful, and almost necessary due to the circumstances of our city."⁴² Other sources corroborate the implication that most ordinary people knew how to swim. Accounts of the city's famous bridge battles note without comment how the fighters would wrestle each other into the water, swim to the side of the canal, clamber out and resume the ritualized hostility.⁴³ Even though the city's death registers contain occasional examples of individuals – especially young men – who had died while swimming, these cases confirm that swimming was a common and socially diffuse activity, particularly in the heat of the summer months.⁴⁴ Experience of swimming may have reduced adverse outcomes when people slipped and fell in the water by accident.

Drowning and mentalities

The key feature of the death data is that the absolute number of deaths from drowning in Venice was consistently low and did not correspond with the prominence of drowning in the cultural mindset. This prominence was generated by the visibility of references to drowning in religious, urban and civic life. Drownings had long been prominent in the culture of the miraculous in Venice. Several miracles associated with one of the city's most renowned icons, the painted image of the Virgin at the church of Santa Maria dei Miracoli, involved drownings. Accounts of miracles attributed to the invocation of the image are preserved in the memoir of the Amadi family, which played a central role in the foundation of the church. One of the very first miracles attributed to the image took place in July 1480, when a cleric called pre' Giovanni da Napoli was washing himself and – not knowing how to swim – fell to the bottom of the canal and remained there for the space of half an hour, whereupon, praying to the Madonna of the Miracoli, he miraculously surfaced and was saved.⁴⁵ Similar miracles are documented in 1483, 1487 and 1491.⁴⁶ Belief in the power of intercession persisted into the early modern period. On August 1, 1645, Livio, the ten-year-old son of the lawyer Zaccaria Pontin, fell in a canal in one of the city's central parishes, where he remained for more than two hours. When Livio was retrieved “dead, all black, and swollen,” his father and mother made a vow to Saint Anthony of Padua, and an hour later the child showed signs of life and was eventually restored to full health. The miracle prompted Pontin to give an image of the saint with a child in his arms to the parish church of Sant' Angelo, which attracted such devotion that a confraternity dedicated to Saint Anthony was founded soon thereafter.⁴⁷

In these pre-eighteenth-century examples, individuals were saved from drowning by two of the most prominent figures in Catholic intercessory culture: the Virgin Mary and Saint Anthony of Padua.⁴⁸ The relationship between drowning and intercession in Venice changed in the eighteenth century, with the intensification of cults of two intercessory figures with a more specific connection to drowning, and with a shift of emphasis from miraculous response to apotropaic prevention. The first of these figures was Contessa Tagliapietra (1288–1308), a pious Venetian noblewoman who had crossed the Grand Canal each day to worship in the church of San Vio in the Dorsoduro district of the city. Her parents, concerned about how far their daughter was travelling from their home parish of San Maurizio, forbade gondoliers from rowing her across, whereupon Tagliapietra “held out her apron over the water and,

assisted by a superior force, passed across it.”⁴⁹ After her death, Tagliapietra was buried at the altar of San Giovanni Evangelista in the church of San Vio, and a popular practice emerged whereby infants were placed on her tomb in the belief that should they fall into the water they would be saved from drowning.⁵⁰ References to this practice in the records of apostolic visitations of 1581 and 1661, along with the inclusion of Tagliapietra in a series of 28 paintings of Venetian holy figures which were produced for the church of the Madonna dell’Orto in 1622, attest to the strength and continuity of her cult.⁵¹ Devotion intensified in the eighteenth century, when Tagliapietra’s body was translated in 1702 – with the approval of the city’s patriarch Giovanni Badoer – to a marble urn on the altar of Sant’Antonio, and her body was observed to be incorrupt, apart from the face.⁵² In 1765, patriarch Giovanni Bragadin sent a printed petition to Pope Clement X, requesting the confirmation of Tagliapietra’s cult.⁵³ Although this request was not granted, it highlights the strength of local devotion and indicates how attention was concentrated on the prevention of deaths from drowning by religious means in the years immediately preceding the introduction of resuscitation techniques.

Even if Tagliapietra’s cult never received official recognition from Rome, a newly-canonized figure who offered protection from drowning also attracted considerable devotion in this period. Saint John Nepomuk (San Giovanni Nepomuceno, 1345–1393) became a highly visible presence throughout the city in the decades which preceded the introduction of resuscitation techniques. Nepomuk was beatified in 1721 and canonized in 1729 by Pope Benedict XIII. Nepomuk, who had been confessor to the queen of Bohemia, was drowned on March 20, 1393 in the Vltava river on the orders of King Wenceslaus of Bohemia for refusing to divulge the secrets of the confessional. Even if the papacy endorsed his cult to highlight the importance of the sacrament of penance, the new saint came to be widely invoked against floods and drownings across the Italian peninsula. Evidence of his cult in Venice is extensive. In 1737, the Scuola di San Rocco in the parish of San Canciano became the Scuola di San Rocco e San Giovanni Nepomuceno.⁵⁴ Since San Rocco was a saint closely associated with plague, a disease which had not afflicted the city since 1631, this change of name reflected a decision to reorient devotion to seek protection from another risk to life. Soon after, a large marble statue of Saint John Nepomuk (1742, Giovanni Marchiori) was positioned at the site of a ferry-station on the corner where the Grand Canal met the Canale di Cannaregio, a visible commitment to safeguard those who traversed

the city's two widest waterways. The saint featured in numerous artistic commissions from the 1730s to the 1760s, including altarpieces by leading painters for the churches of San Cancian (c. 1737; Bartolomeo Litterini), Santo Stefano (1752-55; Jacopo Marieschi), San Polo (1754; Giambattista Tiepolo), Santi Apostoli (1760; Domenico Maggiotto); and statues for the churches of San Bartolomeo (Giovanni Maria Morlaiter); San Geremia (Giovanni Marchiori) and for the façade of San Nicolò dei Mendicoli (1765). There was even a pharmacy "at the sign of Saint John Nepomuk" in the parish of San Lio.⁵⁵ Finally, on 26 April 1794, Saint John Nepomuk was named by Venice's main organ of government, the Senate, as a patron saint of the city. The visibility of the saint may have intensified perceptions that the city's watery environment was inherently risky, despite pious intentions to protect the city's inhabitants from drowning through the power of intercession through ever more intense devotional activity.

The cultural prominence of drowning was also heightened by the unusual visibility of the corpses of the drowned. When a person who had drowned was found, their identity was often not immediately apparent. The city's inhabitants were expected to take the body to the busy Piazzetta at San Marco, facing the lagoon, so as to assist identification. In some cases, however, it was recorded that no one knew who they were, a situation which arose, for example, when the deceased was a visitor to the city or when the body's features had become unrecognizable. The body was later moved from the Piazzetta for a funeral and burial, either to the deceased's parish of residence or, if unidentified, to the church of San Marcuola in the north of the city. In the latter case, members of the Scuola del Cristo, a confraternity which had been responsible for the burial of the drowned since 1648 processed through the streets, carrying the body.⁵⁶ A document from 1765 indicates that the Scuola buried six to eight drowned people each year.⁵⁷ The people of Venice thus encountered drowned bodies in a number of guises and spaces: exposed for identification in one of the city's central squares; shrouded on boats which moved across the lagoon and along the city's canals; or in a casket on the shoulders of the brothers of the Scuola del Cristo as they traversed some of the busiest commercial areas of the city.

The magistrates and clerks of Venice's Health Magistracy were also particularly attuned to drownings. Moreover, the *Provveditori alla Sanità* were unequivocally engaged in activity which corresponds with the definition of public health used by the World Health Organization, namely Donald

Acheson's formulation of "the art and science of preventing disease, prolonging life and promoting health through the organized efforts of society."⁵⁸ Venice's Health Magistracy sought to achieve these goals by monitoring urban mortality closely. In the sixteenth century, the central purpose of death registration was to identify any cases of plague quickly, so that appropriate action could be taken to prevent or contain an epidemic. From the seventeenth century onwards, the magistrates used their highly detailed registers for other purposes as well.⁵⁹ Plague surveillance required close attention to sudden deaths, since those who died from plague were recognized to die within four days of the onset of symptoms. The officials who compiled the city's death registers labelled sudden deaths with a cross in the margin of the register. They soon started to use visual marginalia to annotate a wide range of deaths which had occurred quickly, even if plague was clearly not the cause. Sudden deaths also provoked concern because causation was often ambiguous and because the speed of death precluded the usual religious rites such as extreme unction. Deaths from drowning were visually differentiated from other kinds of sudden death. Usually they were highlighted to users of the civic death registers by wavy lines representing waves in the left margin next to the textual entry. In a small number of cases a well or cistern is drawn in the margin instead, or the object from which the deceased had fallen into the water. Waves first appear in the margin of the death register for 1606, and thereafter feature in the vast majority of the registers.⁶⁰ A well is first depicted in 1618.⁶¹ Deaths in water are the third largest group of visual marginalia and comprise 16.67% of all visual marginalia.⁶² The annotation of drownings in the death registers reflected the preoccupation of the Magistracy with this cause of death, and ensured that this preoccupation endured.

Previous scholars have sought to identify a short-term trigger for the issuing of legislation containing a "method to revive the submerged" in 1768. Nelli-Elena Vanzan Marchini has argued that the deaths by drowning of two noblemen, Domenico Loredan and Andrea Zorzi, in June 1759 and February 1759 were a crucial stimulus.⁶³ But there is no reference to these specific deaths (or even to the deaths from drowning of members of the patriciate in general) in any medical text or document produced by the Health Magistracy, nor is there evidence of any connection between these families and individual magistrates which might have provided a personal motive. Instead, as I have shown, the introduction of legislation on resuscitation in 1768 took place in a predominantly Catholic culture with

a long tradition of engaging with the divine to mitigate risks to life, in an environment studded with visual reminders of the possibility of drowning, and in the context of a long-standing concern with sudden deaths on the part of the Magistracy. Drowning, then, did not suddenly emerge as a new subject of concern in the 1760s. Rather, its prominence in the mentalities of Venetians produced an atmosphere that was receptive to new strategies to prevent death by water.

Resuscitation, print and persuasion

Venice was well placed for a new approach to drownings to be translated into action due to the ability of the Health Magistracy to implement legislation through its sophisticated use of communication. Printed decrees were crucial in promoting attempts to revive the apparently drowned. These decrees sought to persuade people to take action if they encountered someone who needed help and provided information about exactly what they were expected to do. The Magistracy had used print extensively since the 1570s to disseminate and collect information and paid close attention to both the content and materiality of the texts it produced as it sought to enact its public health endeavors.⁶⁴ Printed legislation also intersected with oral and manuscript communication, notably the sending and receipt of handwritten letters and reports. The Magistracy deployed these modes of communication as soon as it decided to take forward Vicentini's proposals on resuscitation and to make them "universally known."⁶⁵ The efficacy of its communication is demonstrated by evidence of resuscitation attempts in the following decades, with both successful and unsuccessful outcomes.

Despite the avowed universality of the message, the format and content of the first decree of December 1768 suggest that physicians and surgeons were its primary audience.⁶⁶ Unusually, the decree was printed in two formats: broadsheet and pamphlet. The pamphlet was aimed at medical practitioners. In early January 1768mv the Health Magistrates wrote to the Prior of Venice's College of Physicians, enclosing several copies and asking him to ensure that they were distributed promptly to members of the College.⁶⁷ Pamphlets were often used by the Magistracy for items which were intended for particular groups who might consult the document repeatedly; in this pamphlet the decree was followed by the text of Vicentini's *Memoria* which offered a detailed medical justification for the proposed

interventions. The broadsheet copies were intended instead for public display, posted up to encourage the decree's secondary audience – the general populace – to fetch a medical professional and not, as the decree cautioned, to use the “useless and vain method” of suspending a submerged person head downwards in the hope of making them regurgitate ingested water. With an estimated male literacy rate of at least 33%, the reach of the broadsheets was considerable, especially given how these texts were often read aloud.⁶⁸ The decree was a complex text which combined information, instruction, persuasion and threat. It referred to “observations,” “experience,” and “expert professors” to convince medical readers of the soundness of the Magistracy's proposals, while incentivizing a response by promising a financial reward if a sworn statement of a successful revival was provided. At the same time, those who “inhumanely” failed to act were told that they ran the risk of incurring corporal and other punishments. The decree was lengthy, at around 1,000 words, and its language was highly medical, including a discussion of the effects of submersion on the lungs. Around half of the text concerned the steps that were to be taken when someone was retrieved from the water. Mouth-to-mouth insufflation was recommended first as a “great, quick and easy aid.” The decree advised on alternative forms of oral insufflation and encouraged its readers to take steps to dry and warm the person, to massage the body with stimulants such as *acqua di melissa*, and to apply a feather or sal ammoniac to the nostrils. *Acqua di melissa* was a herbal tonic made from the combination of grappa with an infusion of the leaves of *Melissa officinalis* (lemon balm), lemon peel, nutmeg, cloves and cinnamon. The decree also specified that the physician or surgeon of the local *Fraterna dei Poveri* should be called; other physicians were expected to act if they were nearby. *Fraterne* were parish-based organizations which had existed across the city since the early eighteenth century and which provided medical care and other forms of charitable support to the poor.⁶⁹ The Magistracy had jurisdiction over the *Fraterne*, enhancing the probability that the medical professionals which they employed would comply with its orders.

Subsequent decrees were more practical than medical in tone and introduced the use of a resuscitation machine: a pair of bellows with accessories. The opening of the decree of 1770 noted that the prescribed “method” which it sought to make more widely known incorporated the measures set out in 1768. The eleven numbered items that followed were more succinct and specific than the 1768 recommendations. They prescribed a sequence of eight actions: moving the individual to an enclosed

space; notifying a physician or surgeon; retrieving a resuscitation machine; removing the individual's clothes, drying the person vigorously, and warming them; performing mouth-to-mouth breathing; administering a tobacco smoke enema; applying stimulants; and giving wine or a tonic. The final three items concerned reimbursement for expenses; the ability of physicians and surgeons to carry out other actions including bloodletting and tracheotomies if deemed necessary; and rewards for action and punishments for inaction. The decree concluded with a list of the six pharmacies where a resuscitation machine was located, one in each of the six districts of the city. The 1778 decree was broadly similar with some subtle points of difference. It opened by highlighting how a "new instrument" was now available which was suitable both for people who had been recovered from water and for all types of asphyxiation and noted that it had issued orders so that in time a machine would be located in every parish. The prescribed method mirrored the one outlined in the 1770 decree while specifying that the patient should be taken to a nearby bakery for treatment. The magistrates also offered a reward of twenty-five ducats to anyone who provided proof that an individual had failed to act, as well as mandating a fine of the same amount if anyone contravened the decree. Finally, the decree concluded with the text of a list of instructions to be affixed to the bellows of each machine. The 1778 decree remained the benchmark; the final decree of 1795mv simply reasserted its validity and updated the list of locations where resuscitation machines could now be found. The list of locations was a visually prominent part of all three decrees, taking up a quarter of the broadsheet in 1770 and half of the page in 1795mv (see Figure 2). The design of the broadsheet sought to encourage the use of resuscitation machines by making it clear to readers where they were located, and by emphasizing the number of machines which were available and easily accessible.

<<Figure 2 here>>

By including details of groups to whom each decree was to be disseminated in printed legislation, the Magistracy sought to increase the likelihood that its resuscitation method would be used. In 1770, the contact points comprised the *capo di contrada*, a parish-based administrative official, sacristans of parish churches, and the head of each ferry station. In 1778, the list of recipients was extended to "the heads of the colleges of physicians and surgeons, to be read out to their members," as well as parish priests, sacristans, apothecaries, parish officials, and heads of ferry stations. These were

all figures who were well known by inhabitants of a parish and who were thought likely to be in a position to act or to encourage others to act if someone needed rescuing. The organizational dimension of the strategy was significant. The Health Magistracy sought to counteract the possibility that an observer would fail to act by articulating specific roles and tasks. Parish officials were made explicitly responsible for ensuring that the patient was transported to a suitable location; named groups were expected to fetch a physician or surgeon who in turn was required to carry out the prescribed treatment. As such, the method to avert deaths from drowning was a public health policy because it sought to prevent deaths and to prolong life via “organized efforts of society.” The Magistracy used print to communicate with the key participants of a parish-focused public health network to achieve its goal of “recalling submerged persons to life.”⁷⁰

<<Figure 3 here>>

The Magistracy also used and publicized rewards to incentivize action. Between 1769 and 1797 it paid out 39 rewards to 34 individuals, mostly surgeons along with a handful of physicians and one boatman. Gaetano Bevilacqua, a surgeon working in Verona, received four rewards, and Pietro Malgarise, a surgeon who worked between Legnago and Montagnana received two rewards. Successful rescues were concentrated in the city of Venice, but also occurred in nine other towns and cities which were ruled by the Republic (see Figure 3). A large proportion of the people who were rescued were male (79.49%). While the age of the rescued is not always specified in the records, around three quarters were adults. Both the age and gender profiles of the rescued correspond closely with the age and gender profiles of deaths by drowning. The decree of 1768 promised a “monetary reward” without specifying the amount. The first two claimants who approached the Magistracy with evidence of successful resuscitations were awarded gold medals instead, albeit with a specified value.⁷¹ In September 1770 the magistrates paid an engraver from the mint for the design of a mold for a silver medal.⁷² But this approach was abandoned in favor of cash in the decree of December 1770, from which point rescuers were awarded four gold *zecchini*. The perceived efficacy of cash rewards is apparent from the decree of 1795mv, which confirmed the reward and the amount – the only detail from the 1770 decree which was reiterated explicitly – noting that the magistrates aimed in this way to “animate” people “to undertake such a charitable act.” Surgeons and physicians who performed resuscitations and claimed

rewards may also have seen compliance with legislation as an opportunity to increase their status and future professional opportunities. Both surgeons who claimed multiple rewards were clearly ambitious individuals. Malgarise, who received rewards in 1777 and 1782, applied in 1783 for a position at the University of Padua, supplying nine witness statements which attested to his surgical prowess in innovative surgical techniques in obstetrics and limb amputations.⁷³ Gaetano Bevilacqua dedicated a treatise on improvements to a machine for fractured legs to the Health Magistracy in 1786.⁷⁴ The wider activity of these surgeons reflects their receptiveness to experimentation with new technologies and eagerness to communicate with the Magistracy about their work.

Rewards for resuscitation attempts incentivized communication with the Health Magistracy as well as immediate action. The petitions and letters which the magistrates received provided important feedback on the efficacy of resuscitation techniques and the circumstances in which an attempt might be successful. These documents usually comprised a detailed statement from the rescuer which outlined the actions taken and witness accounts from trustworthy local figures explaining the circumstances and confirming the rescuer's role. In most cases the local parish priest provided a corroborating statement; letters from physicians, apothecaries and the *capo di contrada* were also common. Within Venice itself, the receipt of a report from the *capo di contrada* within a day of the attempt was mandated by legislation in 1787, which specified that the official was required to confirm if a physician or surgeon had been summoned promptly; if bakers or cake-makers had made their premises available; if the parish resuscitation machine had been administered promptly and found in good working order; and what assistance was provided to "recall" ("richiamare") the submerged person to life.⁷⁵ Reward petitions indicate how dynamics of threat as well as encouragement were at work in these exchanges. In his account of a successful resuscitation in 1794, the physician Giovanni Maria Persian wrote of how "this act of humanity ... has been a very interesting object of the foresight of this Excellent Magistracy, which in the act of threatening the most severe punishments for oversight, has promised a reward to whoever takes action in repeated decrees."⁷⁶ It is hard not to detect a note of sarcasm when Persian observes that he does not fail humbly to present himself to the Magistracy so that these decrees can be carried out in full. Nonetheless, there is no evidence that any individual was ever punished for inaction. One man petitioned the Health Magistracy in 1778, referring to its recent decree and complaining that the *capi di*

contrada of the parish of San Lio had not assisted his sixty-year-old sister Andriana when she fell into a canal, but the officials were not chastised, perhaps because two witnesses stepped in to rescue her from the water and fetch a surgeon and there was no loss of life.⁷⁷

The combination of promises and threats produced a steady stream of accounts of resuscitation attempts. These resonate with contemporary debates about the uncertainty of death, noting without exception how the *sommerso* had been extracted from the water “without signs of life.” Many are at pains to emphasize that the resuscitation method as prescribed by legislation was followed.⁷⁸ Others take care to explain variations. The surgeon Francesco Pajola, for instance, noted that his colleague Antonio Tessari inserted a pipe into the patient’s anus, because the mechanical bellows was not immediately available.⁷⁹ Some aspects of the reports may have encouraged the Magistracy, over time, to promote particular components of the resuscitation method. Lemon balm tonic was recommended as one of a number of possible stimulants both by Vicentini and in the 1770 decree.⁸⁰ In a 1771 reward petition, the physician Giuseppe Perlasca explained how he had applied it to the temples, wrists and over the heart of the man he had resuscitated.⁸¹ In 1778, the Magistracy ordered that a vial of lemon balm tonic be included in the box with the resuscitation machine.⁸²

The system of death registration meant that the Magistracy also received information about unsuccessful resuscitation attempts. Entries documenting deaths by drowning in death registers provide further indications of resuscitation practices, despite their relative brevity in comparison with reward petitions. In particular, they record compliance with legislation, noting how the “usual operation” had been performed, affirming how the commandments of “the Most Excellent Health Magistracy” had been carried out, and documenting the use of resuscitation machines.⁸³ Many entries confirm that treatment had been administered in a bakery, as advised.⁸⁴ Occasionally, entries give a sense of timescales. In 1776, for example, Lorenza Mazzariol was pulled out of the water after half an hour of immersion and treated by a surgeon for two hours.⁸⁵ Treatises on resuscitation paid keen attention to the question of how long someone could survive under water. Sguario offered examples of lengthy periods under water ranging from pearl fishers of the Indies to the divers who reportedly stole the ring which was ceremonially consigned by the doge of Venice into the Adriatic on the feast of the Ascension, whereas Vicentini concluded from an examination of case histories that typically people who were

successfully rescued were only submerged for twenty to thirty minutes, although he was careful to point out that longer periods had been documented.⁸⁶ The Venetian death registers certainly demonstrated that speedy extraction from the water did not guarantee a successful outcome. The lengthy treatment administered to Mazzariol nonetheless shows that attempts were thorough.

The Republic's new approach to drownings required a careful negotiation between the medical and the religious. Most of the inhabitants of Venice were Catholic and believed that a dead person could only be brought back to life by divine intervention. Physicians and the Health Magistracy were at pains to avoid any perception that they were playing God. Anton Serdeczny has highlighted how the relationship between religion and reanimation is very different in treatises concerning resuscitation by Protestant and Catholic authors. Serdeczny emphasizes the prominence of the idea that reanimation occurred through God's blessing in Protestant texts, whereas Catholic writers distinguished between divine will and medical reanimation and said little about the former.⁸⁷ In Venice, the distinction resulted in an emphasis on apparent death in texts on resuscitation. Physicians, surgeons and magistrates consistently used phrases like "senza alcun segno di vita" (without any sign of life) and "semi-vivo" (half-alive).⁸⁸ The persistence of the culture of the miraculous, and the anticipated intercession of specific saints in cases of drowning, produced a scarcity of religious language in accounts of resuscitations. Only a single *capo di contrada* offered the view of a resuscitation that "thanks to God he returned to life."⁸⁹ The absence of references to divine intervention in cases of resuscitation also reflected widespread acceptance that the signs of death were ambiguous, an idea which had become firmly established over the course of the eighteenth century in treatises about the uncertainty of death.⁹⁰ While this discourse had exacerbated fears of premature burial, it also heightened confidence in the possibility of resuscitation through medical intervention.

The records of drownings and rescues demonstrate that the Magistracy persuaded its subjects to attempt resuscitation. In cases of drownings where the death register entry does not document a resuscitation attempt, the entry usually provides information instead on when the individual had fallen in the water and when their body was found. Usually twelve hours or more had elapsed. The Magistracy was thus also successful in convincing readers of its legislation of the point first articulated in the decree of 1768 that: "We know from experience that these 'submerged,' who are extracted from the water, and

from their external appearance thought to be dead, actually are not always dead, but sometimes life remains within them, even if they were submerged for several hours.” Physicians and surgeons erred on the side of caution and attempted resuscitation even if some attempts were ultimately unsuccessful. The actions of these medical professionals demonstrate how the history of medical involvement in eighteenth-century resuscitation transcends the participation of physicians and surgeons in written theoretical debates. High status physicians like the Prior of the College of Physicians had a significant role to play in evaluating proposals and publicizing methods, but the surgeons and physicians who actually performed resuscitations mostly had relatively low positions in the professional hierarchy, either as employees of parish *Fraterne* within the city of Venice or as *medici condotti* attached to particular communities on the mainland.⁹¹ Both roles were often taken up by recent graduates or by practitioners who had moved to the territories of the Republic in search of professional opportunities, and both offered these practitioners employment and a salary as they sought to build up a reputation and income in private practice. The Magistracy’s strategy thus reveals how it recognized the necessity of engaging with physicians and surgeons at all levels of the professional hierarchy in order to achieve its public health goals.

Resuscitation technologies

The promotion of resuscitation by the Venetian Republic was substantially enhanced by the Health Magistracy’s ability to source, refine and distribute appropriate technologies for these practitioners to use. The tobacco smoke enema machine was only one part of a combination of recommended interventions, but it was perceived to be of central importance. In the latter decades of the eighteenth century, the Magistracy paid large sums of money for what it variously referred to as an “istromento” (instrument), “mantice” (bellows), and “macchina” (machine). The Venetian Republic had long sought to exploit new technologies in a range of contexts, and the city’s numerous artisans also explored technological innovation to enhance their profits and profiles.⁹² The Health Magistracy specifically had a long history of reviewing innovative products and paying their owners for them, especially in the field of pharmaceuticals.⁹³ The city’s position as a major trade center meant that a wide range of materials

were easily accessible. Innovation was further encouraged by awareness of the Republic's commitment to the commercial exploitation of intellectual property, whether through the city's patent system which had been enshrined in statute as far back as 1474, or through the granting of privileges to sell specified products.⁹⁴ Overall, then, the city had an optimal infrastructure for innovation in medical technologies. Craftsmen, materials, medical expertise, a commercial ethos, and government interest in new technologies combined in a crucible of innovation.

The announcement of the Health Magistracy's interest in resuscitation in the decree of 1768 soon prompted an enterprising individual to come forward with a device to enhance the provision of insufflation via technology. An entry in the records for September 11, 1769 explained that the surgeon Giuseppe Borghi had brought two instruments to the Magistracy, one to "blow air into the mouth" and the other to "introduce a puff of smoke into the anus easily."⁹⁵ These instruments had been examined by the *Protomedico*, a respected physician employed by the Magistracy to offer expert advice, and were found to be "of singular invention" and deemed "likely to produce a good effect." The magistrates decided that Borghi's instruments would be kept in the archive of the Magistracy "to serve as a model," and the surgeon was paid 25 *zecchini* for his efforts. Three months later the magistrates commissioned the production of 18 pairs of instruments matching the description of Borghi's model from a brass-maker called Giovanni Battista Rota, at a total cost of 576 *lire*, which were to be sent to the main centers of Venice's mainland and maritime empires.⁹⁶ Six pairs remained in the city, and Borghi, as outlined at the outset of this study, used them to treat Francesco Bon in 1771. Knowledge of the technology evidently spread; an additional pair was commissioned from Rota in 1775 at the request of the patrician who governed Raspo in Istria.⁹⁷

In the spring of 1778, unease around a death from drowning seems to have inspired the Magistracy to enhance its provision of resuscitation technologies. Its archive contains a report from the surgeon Giacomo Cagndini [sic] who had unsuccessfully tried to revive a certain Zuanne Tardivo on April 21, 1778.⁹⁸ This document is unique in the archive of the *Sanità* as an account of an unsuccessful attempt which is not in the *Necrologi* series. The surgeon explained how he had attempted to insufflate the lungs and had used a pair of bellows to administer tobacco smoke into the anus. In Cagndini's view, Tardivo's death had occurred unnecessarily because the Magistracy's commands had not been followed,

and particularly because there had been a delay in summoning him to administer treatment. He specified the timeline in detail. Tardivo had been retrieved from a canal in the parish of Santa Soffia at ten hours after sunset by the *capo di contrada*; fetched by clergy from his home parish of San Salvatore four hours later, and only seen by the surgeon after an additional two hours. If he had been fetched at least two hours sooner, Cagnadini claimed, Tardivo would have recovered “in all probability.” The survival and date of his report suggest that the case contributed to the flurry of activity on resuscitation by the Magistracy in May and June of the same year, including the reissuing of legislation and the commissioning of a new resuscitation machine by the magistrate Alvisè Barbarigo. On June 1, 1778 the blacksmith Lorenzo Zanfordina was paid 4 *zecchini* for completing this commission and depositing the model of the new machine at the Magistracy.⁹⁹ Two days later, the Magistracy signed an agreement with another blacksmith, Giacomo Gloder, to produce a number of machines on the basis of the model.¹⁰⁰

<<Figure 4 here>>

This “new” resuscitation machine remained in production and use until and beyond the fall of the Venetian Republic in 1797. The agreement with Gloder specified that it comprised a double bellows in the English style (see Figure 4); a wide [flexible] tube made of black buffalo [leather]; two small white tubes of ivory; a tobacco chamber and coupler with valve, all made of brass; an ivory nozzle with its tube, and partition with fixing, lined with goatskin with its cord; a small box of pine wood with a lighter; half a pound of smoking tobacco; and a small bottle of lemon balm tonic. All of these items were to be contained in a large beech box. The machine was a complex piece of equipment with components made from a wide range of materials. The Venetian context facilitated access to luxury materials like ivory, as well as specialist items like the lemon balm tonic which was made at the Carmelite monastery of the Scalzi in the north of the city. As the inclusion of this item indicates, Gloder was responsible for collating the elements of the machine and did not manufacture every element himself. The comprehensiveness of the box’s contents mirrored the detailed allocation of responsibilities to people who might be involved in any resuscitation attempt in the legislation. The resuscitation box included everything that was required for a rescue attempt: the ready availability of tobacco and the means to ignite it were not left to chance.

The Magistracy took one last step to ensure that its method was administered exactly as it intended. The box included printed instructions on how to use its contents, which were attached to the surface of the bellows.¹⁰¹ These instructions provide concise and precise direction on preparing the patient for treatment, administering oral and anal insufflation, and the stimulants which were to be used. It specified that the bellows should be operated continuously for around one hour. The instructions included guidance on how to tailor insufflation depending on the age and constitution of the patient and advised that the instrument could be used for all types of asphyxiation and apparent death. The Magistracy included the wording of the instructions in the decree of May 27, 1778, and they were also printed separately, with the text set in the shape of an inverted heart to maximize the space on the leaf of the bellows which could be covered. The instructions were devised by Giampietro Pellegrini, the Prior of the city's College of Physicians, and were included in a report he produced on the new machine which was commissioned by the Magistracy.¹⁰² Pellegrini pronounced the new bellows to be "a most useful instrument," and explained how it met the three key requirements of such a device: the ability to introduce a sufficient quantity of air into the long and winding tube of the intestines; the ability to convey it with a powerful impetus; and the ability to maintain the flow for a sustained period of time. Pellegrini explained how the original bellows provided a meagre volume and weak flow of air, whereas these flaws were addressed by the new machine due to its larger size and a double-bellows form. Examination of a surviving double bellows in the Archivio di Stato di Venezia confirms the size and force of the machine.¹⁰³ The bellows are 540mm long, 205mm at their widest point, and expand from a depth of 67mm when closed to 224mm when fully opened. They are made of yellow leather, three leaves of beech wood, and two intermediary wooden pieces, joined together with brass fixings. A tobacco chamber could be attached to the bellows via a brass connector on one of the wooden leaves. A brass nozzle fits onto a wooden base with holes leading into the two main chambers of the device. When operated, the bellows extrudes a powerful single column of air.

The Magistracy also concluded that it wanted far more resuscitation machines to be available for use. Between June and August 1778 it commissioned large numbers of machines from Gloder, at a fixed price of 3 *zecchini* per device.¹⁰⁴ The Magistracy decreed that a pair of bellows would be given to all of the parish-based *Fraterne de Poveri*, to be held at the pharmacy closest to each parish church;

other machines were purchased for public ships. Keen to ensure that this substantial investment retained its value, the Magistracy entered into a further agreement with Gloder in late August. Gloder was to be paid 12 ducats per annum to check that the machines were in good working order and thereby “to keep them for a long time in the beneficial use for which they are intended.”¹⁰⁵ Between 1778 and 1790, Gloder was paid the agreed price for a total of 85 resuscitation machines.¹⁰⁶ Following his death, the production of the devices and the service contract were taken on by another blacksmith, Antonio Rubini, who delivered a further eleven machines.¹⁰⁷ In the weeks before the final resuscitation decree of February 1795mv, the Magistracy produced an inventory of its equipment in a dedicated register, sending a clerk around the city to obtain a written statement on the contents of the box from the person responsible for its storage, usually the local parish priest.¹⁰⁸ Annotations on the register indicate that further checks were carried out in 1800, 1803 and 1804. The notes show that the devices were complete in all cases, aside from a missing vial of lemon balm tonic at five locations, which perhaps had been appropriated for other purposes. The register confirms that there was a resuscitation machine in 66 locations across the city by the late 1790s, mainly parish churches as well as the two pharmacies named in the decrees of 1770 and 1778, a ducal church, and a handful of monastic churches. The register specified the location of a nearby device for the ten small parishes which did not have their own machine. Eleven additional devices were located on islands and ships around the lagoon.

Details of Venetian expenditure on resuscitation technologies show that while the Magistracy paid attention to the adequacy of the resuscitation machine for its intended purpose, its interests transcended innovation. The resuscitation box contained much that was “old” as well as “new.” As Edgerton pointed out, “technologies do not only appear, they also disappear and reappear, and mix and match across the centuries.”¹⁰⁹ Bellows were widely used across the city to stoke fires, and ivory clyster syringes and lemon balm tonic were an established part of healthcare practices. The minutiae of the contents of the box demonstrate that the Magistracy was preoccupied above all with the practicalities of how it would be used, leading to the provision of precise instructions as well as tobacco and the materials to ignite it. It was also attentive to the distribution of equipment, taking care to ensure that machines were available across the city, lagoon, and empire – and even accessible to people on the move in the Adriatic and Mediterranean. While the Magistracy spent a large sum – 288 *zecchini* – on

the purchase of resuscitation machines, it also spent 192 ducats on servicing them between 1779 and 1795, an amount which represented 24% of its investment in equipment. In this way, the Venetian Republic focused its energies on the logistics rather than the epistemology of resuscitation technologies, recognizing the importance of organization in any successful program of public health.

Life, death and public health

What was the impact of the Venetian Republic's investment in resuscitation technologies? Thirty-nine lives were probably saved across the city and its empire. The Republic's actions also had an impact beyond Venetian territory, as they were noted and adopted by other Italian cities in the 1770s, helped by the self-publicity of Francesco Vicentini, who secured the republication of his *Memoria* and the Health Magistracy's accompanying decree in Milan in 1769, and whose work was widely cited beyond Venice.¹¹⁰ But the impact on mortality in Venetian territories was relatively low compared to other parts of Europe. In the first year of the Amsterdam Society, 19 people were saved; while England's Royal Humane Society claimed that a total of 2,319 people had been restored to life between 1774 and 1799 in its Annual Report of the latter year.¹¹¹

Resuscitation and rescue were conceptualized more tightly in Venice than elsewhere. In the Venetian Republic, despite legislative provision for other forms of asphyxiation, rewards were only awarded in cases of potential drownings, when the rescued had shown no signs of life, and when the resuscitation attempt was successful.¹¹² In Saxony, by contrast, rewards were awarded for rescues which were both successful and unsuccessful.¹¹³ The Royal Humane Society, moreover, offered rewards for "the restoration of human life, when suspended by various kinds of accidental and sudden death, viz. drowning, strangling, apoplexy, suffocation, and by the noxious vapors of mines, caverns, &c., intense cold, and the tremendous stroke of lightning." Across northern Europe, governments and charitable institutions encouraged the whole populace to attempt rescues, whereas the Venetian Republic promoted a specific resuscitation method which was to be administered by medical professionals. The narrow conceptualization of a rescue opportunity did not mean that the Venetian Republic was not committed to lifesaving. Opportunities for resuscitation were limited, as indicated by the small number of deaths

from drowning. The use of resuscitation machines endured beyond the fall of the Republic and into the nineteenth century. The persistence of resuscitation practices was assisted by the institutional context, since the Health Magistracy continued its work uninterrupted by shifts to Napoleonic and Habsburg rule. A decree on resuscitation from 1800 mirrored its predecessors with a series of numbered steps and confirmation of the method and promised reward.¹¹⁴ As late as 1831, 24 new resuscitation machines were commissioned, and their locations were still being publicized in 1849.¹¹⁵

In order to achieve its goal of preventing avoidable deaths from drowning, the government of the Venetian Republic recognized that it needed to communicate effectively and facilitate the use of resuscitation technologies. The Health Magistracy targeted figures which it believed had key roles to play in carrying out resuscitation attempts; made the roles and responsibilities of particular groups explicit; tailored the format and language of its communications to ensure that the messages it sought to convey were clear, accessible and persuasive; and obtained feedback on its resuscitation method through a combination of rewards and threats. The Magistracy enabled the use of resuscitation machines by purchasing, distributing and publicizing the locations of the devices, investing in their continued maintenance, and providing detailed sequential instructions on how to operate them. In these two areas of communication and technology, the Magistracy provided leadership while welcoming the contributions of those with specialist expertise.

What remains striking, nonetheless, is the contrast between these considerable efforts and the very low number of drownings. Although Venice's Health Magistrates said little about their motives, the first decree on resuscitation of 1768 noted that they had been moved to act by their "paternal charity." This paternalistic attitude resonates with Richard Bell's argument that participation in humane societies in the "Newly United States" permitted "the ostentatious display of humanitarian concern and financial largesse for the purposes of concentrating authority and calibrating status."¹¹⁶ Successful resuscitation attempts, as we have seen, also enhanced the status and authority of surgeons and physicians. Resuscitation, moreover, was a projection of power. A resuscitation attempt represented an intervention to the body of the rescued person to which they had not consented. At no point in the Venetian records is there any acknowledgement of the possibility that someone might not want to be resuscitated.

These dynamics raise the question of how far the promotion of resuscitation was an expression of the concept of “medizinische Polizey” or “medical police.” This idea developed in the eighteenth century as a characterization of public health policies which sought to improve population health to strengthen the power and economic success of a state.¹¹⁷ Although most closely associated with the German states, one of its key proponents, Johann Peter Frank, worked at the University of Pavia in northwest Italy between 1785 and 1795. Standardization and organization were central to the implementation of “medical police,” which was pursued through state-led and doctor-mediated efforts.¹¹⁸ There are clear parallels with the approach to resuscitation in Venice. Does this mean that scholarship on public health should pay more attention to the state’s attempts to manage death? Yes and no. As this study has shown, the use of resuscitation was shaped by cultural as well as political and administrative factors.

Changes in how people thought about death were significant. A cluster of unexpected deaths in Rome in 1705 and 1706 sparked widespread public anxiety about sudden death.¹¹⁹ Soon afterwards, Venice’s Health Magistracy intensified its scrutiny of sudden deaths by appointing an additional ten physicians to conduct autopsies in such cases, in support of the existing work of the *Protomedico*.¹²⁰ The fear of sudden death contributed to the development of a mindset in which contemporaries sought to reduce the risk of death, however small. Sguario and Vicentini, whose treatises launched the deployment of resuscitation in Venice and the Republic’s territories, stated explicitly that it was worth acting even if just one life were saved or if only one in a thousand resuscitation attempts were successful.¹²¹ Venice’s Health Magistracy took action to eradicate mortality from sources which caused even fewer deaths than drowning, instigating mass culls of dogs from 1768 to prevent deaths from rabies and issuing a manual on how to install lightning conductors in 1787.¹²²

While scholars from Ariès and Vovelle onwards have long argued that death became more secular in the eighteenth century, I contend that the desire to eliminate contingency was not driven by secularization in Venice.¹²³ Intercessory culture continued and shifted its focus from response to prevention. Sudden death threatened the soul because it precluded administration of the last rites. Prolonging life permitted sacramental observance and offered better prospects for the afterlife.¹²⁴ The reference to “paternal charity” expressed how the promotion of resuscitation was an act of performative

Catholicism for the Health Magistrates, a demonstration of their love of god and love of their fellow men. Charitable practices were underpinned by devotional commitment and had a long history of state involvement.¹²⁵ In its legislation about resuscitation, the Republic set out a framework for a new way in which members of society might take action to help each other. Even if resuscitation placed more emphasis on the here-and-now than the hereafter, an “act of humanity,” like the assistance provided by the physician Giovanni Maria Persian, could still be a Christian endeavor.

Tobacco smoke enema machines were used widely across later eighteenth-century Europe, including in Amsterdam, Florence, Hamburg, Paris, London, and Vienna. While resuscitation technologies were thus not unique to Venice, their use in the city and its territories offers lessons which expand our understanding of European public health. Until recently, scholars of pre-modern public health focused almost exclusively on interventions which aimed to prevent and contain communicable disease, especially plague; on the institutional provision of public health via hospitals; and on the regulation of medical practice. Lately, this scope has been expanded with imaginative studies of attempts to promote population-level health through the management of the environment.¹²⁶ These areas of interest have also characterized much scholarship on public health in the modern era. This study has had the broader ambition of studying the processes as well as the goals of public health. The goals of “preventing disease, prolonging life and promoting health” need to be interpreted through the lens of “the organized efforts of society.” The use of resuscitation technologies in eighteenth-century Venice was achieved through the efforts of a wide range of individuals including but not limited to magistrates and healthcare professionals. The government’s key role was in coordinating these efforts. Communication was the bedrock of its process. The representatives of the Republic recognized that they needed to listen as well as mandate in order to persuade their subjects to act.

Figure 1. Giovanni Grevembroch, *Ammaestramento a figli*, eighteenth century.

Figure 2. Decree of February 22, 1795mv. Archivio di Stato di Venezia.

Figure 3. Rewards for resuscitation in Venice and its territories. Drawn by Matilde Grimaldi. ©

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Figure 4. *Soffietto per annegati*, eighteenth century. Archivio di Stato di Venezia.

¹ Archivio di Stato di Venezia [ASV], *Provveditori alla Sanità* [hereafter cited as *Sanità*], b. 110, fascicolo [fasc.] 410.

² *Sanità*, bb. 157 and 762, 1 December 1770.

³ *Sanità*, bb. 157 and 563, 24 December 1768; bb. 158 and 769, 27 May 1778; b. 158, 22 February 1795mv. Dates in this article are given in the format used in contemporary documents, in which January and February are accorded the suffix mv [*more veneto*].

⁴ Anton Serdeczny, *Du tabac pour la mort: Une histoire de la réanimation* (Ceyzérieu: Champ Vallon, 2018), 262.

⁵ Serdeczny, *Du tabac* (n. 4), 242.

⁶ Ibid., 245.

⁷ Peter C. Mancall, “Tales Tobacco Told in Sixteenth-Century Europe,” *Environmental History* 9:4 (2004): 649–678 (656–657).

⁸ Keith Wrightson, *Earthly Necessities: Economic Lives in Early Modern Britain, 1470–1750* (New Haven: Yale University Press, 2000), 180.

⁹ John Woodall, *The Surgeons Mate or Military & Domestique Surgery* (London: Printed by Rob. Young for Nicholas Bourne, 1639), between fols. 26 and 27. On Woodall, see J.H. Appleby, “New Light on John Woodall, Surgeon and Adventurer,” *Med. Hist.* 25:3 (1981): 251–268.

¹⁰ On these texts and the evolution of ideas of reanimation in the French context, see Serdeczny, *Du tabac* (n. 4), esp. 43–92, 245.

¹¹ Jacques Benigne-Winslow and Jacques-Jean Bruhier, *Dissertation sur l’incertitude des signes de la mort* (Paris: Morel, 1742), 352–353; translation from [J.J. Bruhier], *The Uncertainty of the Signs of Death* (London: M. Cooper, 1746), 114.

¹² Jacques Jean Bruhier, *Dissertation sur l’incertitude des signes de la mort*, 2nd edition (Paris: Morel, 1745), 185–186; translation from *To the Publick: A New Method of relieving such Persons as are thought to be suffocated, or drowned* (1748), flysheet, Houghton Library, Harvard University.

¹³ Ludmilla Jordanova, *Nature Displayed: Gender, Science and Medicine 1760–1820* (London and New York: Routledge, 2013), 154–155.

¹⁴ Renato Lungarotti, *Storia della rianimazione* (Rome: Verduci, 1973), 44.

¹⁵ Francesco Vicentini, *Memoria intorno al metodo di soccorrere i sommersi* (Venice, 1768), xv. Vicentini’s text drew heavily on an earlier dissertation by Eusebio Sguario. See Eusebio Sguario, *Dissertazione epistolica intorno al ravvivare i sommersi, e del giudicare sino a quanto la vita possa dilungarsi sott’acqua* (Venice: Pietro Bassagli, 1761).

¹⁶ *Sanità*, b. 760, 24 December 1768.

¹⁷ Serdeczny, *Du tabac* (n. 4), 26, 79–84; Silvia Marinozzi, “Curare la morte apparente. Nosologia e tecniche di rianimazione nell’Italia del Settecento,” *Medicina nei secoli arte e scienza* 27 (2015): 307–358; Silvia Marinozzi, “Risuscitare i (quasi) morti. La rianimazione nell’Italia del XVIII secolo,” in Francesco Paolo de Ceglia (ed.), *Storia della definizione di morte* (Milan: FrancoAngeli, 2014), 233–

249; Alexander Kästner, "Saving Self-murderers: Lifesaving Programs and the Treatment of Suicides in Late Eighteenth-Century Europe," *J. of Soc. Hist.* 46 (2013): 633–650; Lungarotti, *Storia* (n. 14); Bianca Rosa D'Este, "Regulation for "Saving" the Drowned in Italy (XVIII–XIXth century), with Particular Reference to the Republic of Venice," *Medicina nei secoli arte e scienza* 2 (1990): 61–73; Alessandro Fadelli, "A Venezia contro gli annegamenti e il vaiolo. Francesco Vicentini (Visentini), medico sacilese del '700," *Atti dell'Accademia 'San Marco' di Pordenone* 15 (2013): 719–747; Nelli-Elena Vanzan Marchini, *Venezia: Da laguna a città* (Venice: Arsenale editrice, 1985), 129–136; Nelli-Elena Vanzan Marchini, *I mali e i rimedi della Serenissima* (Vicenza: Neri Pozza, 1995), 239–252; Nelli-Elena Vanzan Marchini, *Venezia: Luoghi di paura e voluttà* (Mariano del Friuli: Edizioni della Laguna, 2005), 42–49.

¹⁸ Serdeczny, *Du tabac* (n. 4), 134, 257–302.

¹⁹ David Edgerton, *The Shock of the Old: Technology and Global History since 1900* (London: Profile, 2006), xv, 212.

²⁰ *Ibid.*, 80.

²¹ Daniele Beltrami, *Storia della popolazione di Venezia dalla fine del secolo XVI alla caduta della Repubblica* (Padova: Antonio Milani, 1954), 59.

²² On death registration, see Alexandra Bamji, "Marginalia and Mortality in Early Modern Venice," *Renaiss. Stud.* (2018), 1–25; Alexandra Bamji, "Medical Care in Early Modern Venice," *J. of Soc. Hist.* 49 (2016): 483–509; Monica Del Rio (ed.), *509: Provveditori alla sanità. Necrologi (1537–1805) Inventario analitico* (Venice, 2005).

²³ Sample of deaths in water for 1706, 1715, 1726, 1735, 1746, 1756, 1766, 1768, 1769, 1771, 1776, 1781, 1786, 1796. N = 177. Source: *Sanità*, bb. 906, 912, 920, 926, 934, 943b, 953, 955, 956, 958, 963, 968, 973, 983.

²⁴ Status profile of all deaths/drownings: higher status = 13.90%/5.23%; lower status = 84.20%/90.85%; religious = 1.90%/3.92%. On social status in the civic death registers see Bamji, "Medical care" (n. 22), 494–6.

²⁵ Age profile of deaths by drowning: 0–4 = 5.00%; 5–14 = 11.25%; 15–24 = 15.00%; 25–34 = 19.38%; 35–44 = 11.88%; 45–54 = 10.00%; 55–64 = 13.75%; 75–84 = 4.38%; 85–94 = 1.88%.

For drownings today, see World Health Organization, *Drowning: Key Facts*, 15 January 2018. <https://www.who.int/news-room/fact-sheets/detail/drowning> [accessed 22 February 2019].

²⁶ Seasonality profile of deaths by drowning: January = 8.47%; February = 5.08%; March = 12.43%; April = 8.47%; May = 7.34%; June = 7.91%; July = 18.08%; August = 3.95%; September = 5.65%; October = 6.21%; November = 9.60%; December = 6.78%. The peak in July is connected to a higher number of swimming-related drownings.

²⁷ See, for example, *Sanità*, b. 912, 12 April 1715; b. 968, 18 January 1781mv; b. 983, 25 July 1796; 29 November 1796.

²⁸ *Sanità*, b. 958, 11 October 1771.

²⁹ For example, *Sanità*, b. 958, 6 March 1771; 17 April 1771.

³⁰ For example, *Sanità*, b. 906, 15 November 1706; b. 983, 3 April 1796; 10 August 1796.

³¹ Richard Cobb found a similar mix of causes and circumstances in his study of dead bodies retrieved from the Seine between 1795 and 1801. See Richard Cobb, *Death in Paris* (Oxford: Oxford University Press, 1978).

³² On executions by drowning, see Paul F. Grendler, *The Roman Inquisition and the Venetian Press, 1540–1605* (Chicago: University of Chicago Press, 1975), 57, 59.

³³ Sguario, *Dissertazione* (n. 15), 4.

³⁴ See Lungarotti, *Storia* (n. 14), 51; Fadelli, “A Venezia” (n. 17), 723.

³⁵ Alberto Rizzi, *Vere da pozzo di Venezia* (Venice: Filippi Editore, 1981), 7.

³⁶ Vicentini, *Memoria* (n. 15), lv: 1758 = 17 [5387]; 1759 = 21 [6612]; 1760 = 10 [5582]; 1761 = 20 [5633]; 1762 = 5 [6936]; 1763 = 18 [5561]; 1764 = 11 [5019]; 1765 = 24 [5302]; 1766 = 22 [5049]; 1767 = 16 [5314]. Total = 164 [56395]. Annual deaths from *Sanità*, bb. 945–954 are given in square brackets.

³⁷ Deaths in water: 1715 = 24; 1768 = 19; 1769 = 13; 1770 = 26; 1771 = 25; 1776 = 23; 1781 = 18; 1786 = 18; 1796 = 23. Source: *Sanità*, bb. 912, 955, 956, 957, 958, 963, 968, 973, 983.

³⁸ Craig Spence, *Accidents and Violent Death in Early Modern London, 1650–1750* (Woodbridge: Boydell Press, 2016), 39. Population figures for London have been estimated at 410,000 in 1650 and 676,000 in 1750.

³⁹ Catherine Denys, “La mort accidentelle à Lille et Douai au XVIIIe siècle: mesure du risque et apparition d’une politique de prévention,” *Histoire urbaine* 2 (2000): 95–112 (100). The population of Lille was 55–60,000 in this period.

⁴⁰ The population of Venice was 138,067 in 1696, 149,476 in 1760, and 137,240 in 1797. Beltrami, *Storia*, 59.

⁴¹ Baldesar Castiglione, *The Book of the Courtier: The Singleton translation*, ed. by Daniel Javitch (New York: W.W. Norton, 2002), 29.

⁴² Giovanni Grevembroch, *Gli abiti de veneziani di quasi ogni età con diligenza raccolti e dipinti nel secolo XVIII*, vol. 4 (Venice: Filippi Editore, 1981), 142.

⁴³ See Robert C. Davis, *The War of the Fists: Popular Culture and Public Violence in Late Renaissance Venice* (Oxford: Oxford University Press, 1994), 69.

⁴⁴ *Sanità*, bb. 958, 27 July 1771, 30 July 1771; b. 963, 29 July 1776, 17 August 1776; b. 968, 2 August 1781; b. 980, 8 July 1793.

⁴⁵ James S. Grubb (ed.), *Family Memoirs from Venice (15th–17th centuries)* (Rome: Viella, 2009), 16.

⁴⁶ *Ibid.*, 22, 23, 27.

⁴⁷ ASV, *Provveditori di Comun*, R. T, Matricola della Scuola di S. Antonio in S. Angelo, f. 191r.

⁴⁸ On the culture of the miraculous in Renaissance Italy, see Abigail Brundin, Deborah Howard and Mary Laven, *The Sacred Home in Renaissance Italy* (Oxford: Oxford University Press, 2018), 251–260.

⁴⁹ *Compendio della vita, morte e miracoli della beata Contessa Tagliapietra nobile vergine veneziana* (Venice: G.B. Occhi, 1762), 5.

⁵⁰ *Compendio* (n. 49), 6; Helen Deborah Walberg, “The Marian Miracle Paintings of Alessandro Varotari (Il Padovanino, 1588–1649)” (Ph.D. diss., Princeton University, 2004), 236.

⁵¹ *Ibid.*, 236–238.

⁵² *Compendio* (n. 49), 7.

⁵³ *Alla Santità di Nostro Signore Clemente XIII. Memoriale di Monsig. Patriarca di Venezia e Vescovi Suffraganei per la conferma, ed aumento del culto della Beata Contissa detta volgarmente Contessa Tagliapietra Vergine Nobile Veneta* (Venice: Modesto Fenzo, 1765)

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- ⁵⁴ Archivio della Curia Patriarcale di Venezia (ACPV), Parrocchia di San Canciano, Scuola di S. Rocco e S. Giovanni Nepomuceno, Capitolar, 17 June 1737.
- ⁵⁵ *Sanità*, B. 176, 14 September 1786.
- ⁵⁶ ASV, *Provveditori di Comun*, R.N., Matricola della Scola del S.S. Croceffisso in S. Marcola, f. 108v, 16 March 1648.
- ⁵⁷ ASV, *Provveditori di Comun*, b. 62, fasc. 218, 23 December 1765.
- ⁵⁸ Donald Acheson, *Public Health in England: The Report of the Committee of Inquiry into the Future Development of the Public Health Function* (London: HMSO, 1988); World Health Organization, 'Public health services', <http://www.euro.who.int/en/health-topics/Health-systems/public-health-services> [accessed 22 February 2019].
- ⁵⁹ For a fuller discussion, see Bamji, "Marginalia" (n. 22), 11–15.
- ⁶⁰ Del Rio, *Inventario* (n. 22), xlvi–lvii.
- ⁶¹ *Sanità*, b. 849.
- ⁶² Bamji, "Marginalia" (n. 22), 4.
- ⁶³ Vanzan Marchini, *Da laguna* (n. 17), 129; Vanzan Marchini, *Luoghi di paure* (n. 17), 42–43.
- ⁶⁴ See Alexandra Bamji, "Health Passes, Print and Public Health in Early Modern Europe," *Soc. Hist. of Med.* 32:3 (2019), 441–464 (457–462).
- ⁶⁵ *Sanità*, b. 760, 24 December 1768.
- ⁶⁶ *Sanità*, b. 157 [broadsheet] and b. 563 [pamphlet], 24 December 1768.
- ⁶⁷ *Sanità*, b. 585, 7 January 1768mv.
- ⁶⁸ For literacy rates, see Paul F. Grendler, "Education in the Republic of Venice," in Eric R. Dursteler (ed.), *A Companion to Venetian History, 1400–1797* (Leiden: Brill, 2013), 675–699 (693).
- ⁶⁹ See Bamji, "Medical care" (n. 22), 496–497.
- ⁷⁰ *Sanità*, b. 158, 22 February 1795mv.
- ⁷¹ *Sanità*, b. 761, 8 May 1769; 11 August 1769.
- ⁷² *Sanità*, b. 109, fasc. 125, 17 September 1770.
- ⁷³ *Sanità*, bb. 768, 773; ASV, *Riformatori dello Studio di Padova*, b. 442, fasc. Pietro Malgarise.

⁷⁴ Gaetano Bevilacqua, *Memoria intorno ad alcuni necessarij miglioramenti fatti alla macchina per le fratture delle gambe* (Verona, 1786); see also *Sanità*, b. 176, 8 June 1787.

⁷⁵ *Sanità*, b. 777, 8 May 1787.

⁷⁶ *Sanità*, b. 147, fasc. 394, 18 August 1794

⁷⁷ *Sanità*, b. 172, 11 September 1778.

⁷⁸ See, for example, *Sanità*, b. 763, 11 September 1772.

⁷⁹ *Sanità*, b. 122, fasc. 234, 5 September 1782.

⁸⁰ Vicentini, *Memoria* (n. 15), xlvi.

⁸¹ *Sanità*, b. 110, fasc. 248, 24 April 1771.

⁸² *Sanità*, b. 769, 3 June 1778.

⁸³ *Sanità*, b. 958, 2 April 1771; b. 978, 26 December 1791; b. 983, 7 June 1796, 16 June 1796, 29 January 1796mv.

⁸⁴ *Sanità*, b. 973, 23 March 1786, 25 March 1786; b. 978, 26 December 1791; b. 980, 4 November 1793; b. 983, 16 June 1796.

⁸⁵ *Sanità*, b. 963, 15 July 1776.

⁸⁶ Sguario, *Dissertazione* (n. 15), 28–37; Vicentini, *Memoria* (n. 15), xxvi–xxx.

⁸⁷ Serdeczny, *Du tabac* (n. 4), ch. 5.

⁸⁸ See, for example, *Sanità*, b. 762, 15 January 1770mv; b. 768, 4 August 1777; b. 120, 19 April 1781.

⁸⁹ *Sanità*, b. 110, 16 December 1771.

⁹⁰ See Marinozzi, “Curare” (n. 17); Sean M. Quinlan, “Apparent Death in Eighteenth-Century France and England,” *French Hist.* 9:2 (1995): 27–47; Václav Grubhoffer, “Fear of Seeming Death in Eighteenth-Century Europe,” in Albrecht Classen (ed.), *Death in the Middle Ages and Early Modern Times* (Berlin: De Gruyter, 2016), 491–517.

⁹¹ On medical careers and *medici condotti*, see Donatella Bartolini, *Medici e comunità: esempi dalla terraferma veneta dei secoli XVI e XVIII* (Venice: Deputazione di Storia Patria per le Venezie, 2006).

⁹² See Roberto Berveglieri, *Inventori stranieri a Venezia (1474–1788)* (Venice: Istituto Veneto di Scienze, Lettere ed Arti, 1995).

⁹³ See, for example, Jane Stevens Crawshaw, “Families, Medical Secrets and Public Health in Early Modern Venice,” *Renaissance Studies* 28:4 (2014): 597–618.

⁹⁴ On patents, see Francesca Trivellato, “Guilds, technology and economic change in early modern Venice,” in S.R. Epstein and Maarten Prak, *Guilds, Innovation and the European Economy, 1400–1800* (Cambridge: Cambridge University Press, 2008), 199–231 (222). On the registration of medical “secrets”, see Sabrina Minuzzi, *Sul filo dei segreti: Farmacopea, libri e pratiche terapeutiche a Venezia in età moderna* (Milan: Unicopli, 2016), 21–30.

⁹⁵ *Sanità*, b. 761, 11 September 1769.

⁹⁶ *Sanità*, b. 761, 11 December 1769.

⁹⁷ *Sanità*, b. 766, 21 April 1775.

⁹⁸ *Sanità*, b. 172, 24 April 1778.

⁹⁹ *Sanità*, b. 769, 1 June 1778.

¹⁰⁰ *Sanità*, b. 117, 3 June 1778.

¹⁰¹ A pair of bellows with printed instructions attached formed part of the holdings of the ASV until the 1970s, when it is believed to have been removed without authorization. For a photograph of the bellows, see Lungarotti, *Storia* (n. 14), 55.

¹⁰² *Sanità*, b. 117, fasc. 78, 3 June 1778.

¹⁰³ ASV, *Soffietto usato per la rianimazione degli asfissati a seguito di cadute in acqua*.

¹⁰⁴ *Sanità*, b. 769, 10 June 1778, 29 July 1778, 3 August 1778, 8 August 1778.

¹⁰⁵ *Sanità*, b. 769, 19 August 1778.

¹⁰⁶ *Sanità*, b. 769, 10 June 1778, 29 July 1778; b. 770, 19 May 1779, 2 August 1779; b. 773, 8 May 1782; b. 776, 24 March 1785, 3 June 1785, 6 June 1785, 3 October 1785; b. 778, 15 September 1786; b. 780, 5 May 1788, 28 July 1788; b. 781, 20 July 1789; b. 782, 28 May 1790, 28 December 1790.

¹⁰⁷ *Sanità*, b. 782, 7 January 1790mv; b. 785, 5 June 1793; b. 788, 16 March 1796.

¹⁰⁸ *Sanità*, b. 1007, *Ricevute sommersi*.

¹⁰⁹ Edgerton, *The Shock* (n. 19), xii.

¹¹⁰ Lungarotti, *Storia* (n. 14), 53; Fadelli, “A Venezia” (n. 17), 727.

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- ¹¹¹ Lungarotti, *Storia* (n. 14), 46; Serdeczny, *Du tabac* (n. 4), 227; William Hawes, *Annual Report 1799* (London: J. Nichols, 1799), 4.
- ¹¹² In one early case, when Zuanne Piazza was rescued but died the next day from catarrh, the physician Perlasca received a reward. *Sanità*, b. 110, 24 April 1771; b. 958, 2 April 1771.
- ¹¹³ Kästner, “Saving” (n. 17), 638–639.
- ¹¹⁴ ASV, *Tribunale supremo di Sanità*, b. 12, 12 May 1800.
- ¹¹⁵ Vanzan Marchini, *Da laguna* (n. 17), 135; Lungarotti, *Storia* (n. 14), 63.
- ¹¹⁶ Richard Bell, *We Shall Be No More: Suicide and Self-Government in the Newly United States* (Cambridge, MA: Harvard University Press, 2012), 89.
- ¹¹⁷ See George Rosen, “Cameralism and the Concept of Medical Police,” *Bull. of Hist. Med.* 27:1 (1953): 21–42; Giorgio Cosmacini, *Storia della medicina e della sanità in Italia* (Laterza, 2005), 264.
- ¹¹⁸ See Michel Foucault, “The Birth of Social Medicine,” in Michel Foucault, *Power: The Essential Works of Michel Foucault 1954-1984*, ed. by James D. Faubion (New York: The New York Press, 2000), 134–156 (140–141).
- ¹¹⁹ Maria Pia Donato, *Morti improvvisate: Medicina e religione nel Settecento* (Rome: Carrocci, 2010).
- ¹²⁰ *Sanità*, b. 746, 15 April 1711.
- ¹²¹ Sguario, *Dissertazione* (n. 15), 5; Vicentini, *Memoria* (n. 15), liii–liv.
- ¹²² *Sanità*, b. 760, 25 May 1768; *Maniera pratica di fare li conduttori* (Venice: Z. Antonio Pinelli, 1787).
- ¹²³ Philippe Ariès, *The Hour of Our Death*, trans. Helen Weaver (New York: Knopf, 1981); Michel Vovelle, *Piété baroque et déchristianisation en Provence au xviii^e siècle* (Paris: Editions du Seuil, 1978).
- ¹²⁴ See Donato, *Morti* (n. 119), 126.
- ¹²⁵ See David D’Andrea, “Charity and confraternities,” in Eric R. Dursteler, *A Companion to Venetian History, 1400-1797* (Leiden: Brill, 2013), 421–447.
- ¹²⁶ For example, Guy Geltner, “Public Health and the Premodern City: A Research Agenda,” *Hist. Compass* 10:3 (2012): 231–245; Guy Geltner, “Healthscaping a Medieval City: Lucca’s *Curia viarum* and the Future of Public Health History,” *Urb. Hist.* 40:3 (2013): 395–415; Carole Rawcliffe, *Urban Bodies: Communal Health in Late Medieval English Towns and Cities* (Woodbridge: Boydell Press, 2013).